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ABSTRACT

The document on program design and development, is the second book in a multimedia program, "Educating the Gifted and Talented," a series designed to provide background information, supplementary materials, workshop activities, and discussion questions for individuals and teachers working with or preparing to work with gifted students. Chapter 1 presents a rationale for special programs for gifted and talented students by pointing out program benefits to the individual, to the school and teacher, and to society. Misconceptions and unspoken concerns regarding the gifted are responded to. A second chapter discusses the various organizational structures designed to meet the needs and to accommodate the characteristics of gifted and talented students. Three general categories of structures (totally separate, semiseparated, and integrated) are reviewed, and three approaches to programing (acceleration, enrichment, and counseling) are highlighted. Chapter 3 examines three models to help teachers analyze and develop curriculum--Bloom's Taxonomy, Guilford's Structure of Intellect, and Renzulli's Enrichment Triad. Chapter 4 points out the characteristics of a successful teacher of the gifted and considers several methods for locating appropriate teachers. Chapter 5 focuses on the purposes of the program evaluation, the issues in evaluation of programs for gifted and talented students, and the concept of using a variety of approaches to program evaluation. A specific example of an evaluation is offered. A final summary chapter answers several questions program developers might be asked when initiating a gifted/talented program and outlines 15 steps for developing a program for the gifted which parallel the preceeding questions. Supplementary materials include a glossary of administrative designs, a list of teacher preparation programs in gifted and talented education, reasons for denial of funding, a sample program, and selected references. Also provided are teacher activities which relate to program design and development. (SBH)

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Why develop a program designed for the gifted and talented? Before initiating such a program, certain popular misconceptions about these individuals and special programs should first be addressed. Some of the unstated fears should also be addressed to help overcome unconscious resistance to program development for gifted and talented individuals.

Chapter 2. Program Design 23

Programs for gifted and talented can take any of several forms, depending on local philosophies, policies, resources, and population. However, several general understandings cross program designs. Primary among these underlying assumptions is the interrelationship of all components of the program: philosophy, program goals, characteristics of the population, selection process, administrative design, curriculum, and program evaluation.

Chapter 3. Curricular Models 39

During the design stage of program development, close attention must be paid to the type of curriculum to be implemented. This curriculum should be different from that already in place. Although three popular approaches are presented, the specific approach selected would depend on several factors, such as the goals of the program, the characteristics of the learners, and the administrative design.

Chapter 4. Teacher Selection 59

A vital element of any program is the staff, including teachers, administrators, and counselors. Each member of the staff should be selected carefully and then trained to work effectively with gifted and talented students.

Chapter 5. Program Evaluation 66

The assessment of the effectiveness of the program should be an ongoing process so that various elements may be modified to provide the most effective learning *environments. In addition, the program should be evaluated in terms of overall effectiveness in the achievement of both general and specific goals. The purpose of the latter kind of evaluation is to provide the school and community with information about the program and appropriate modifications that will be made to achieve the goals more effectively.*

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When first proposing a program for gifted and talented students, the developer should be prepared to answer several specific questions about the envisioned program. While steps in program development are usually listed sequentially, many must be taken simultaneously. Each step should be continually reviewed and revised until the entire procedure is completed. Even then, many of the steps should be revisited periodically.

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PREFACE

Program Design and Development for Gifted and Talented Students is the second book in NEA's multimedia program *Educating the Gifted and Talented,* which is designed to provide background information, supplementary materials, workshop activities, and discussion questions for (a) individuals preparing to work with gifted students, (b) teachers currently working with classes of gifted students, and (c) teachers with a few gifted students in their classes. The materials in this program are also intended to help administrators and parents concerned with issues involved in the education of the gifted.

The book's general format consists of three sections: (1) background information and ideas on major aspects of program design and development; (2) supplementary materials and examples for your interest and use; and (3) a series of activities to help you become involved with the topic(s) and to apply the ideas to your specific situations. Examples, related experiences, and commentary are provided throughout the text for interest as well as for illustration of ideas. Although the facts in the anecdotes and the case study are true, the names of persons involved have been changed to protect their privacy.

While the various areas of concern are presented sequentially, teachers and program developers are encouraged to move freely back and forth among them. When considering program development, for instance, specific characteristics of the gifted in the school population should be kept clearly in mind so that the strategies developed will build upon these characteristics rather than contradict them. If, for example, the aim is to design a program to develop general intellectual or creative abilities, it would be well to avoid a narrow, accelerated, content-oriented curriculum, the focus of which would be in opposition to the broad interests and probing curiosity characteristic of this population.

We gratefully acknowledge the many substantive contributions to this work by Margot Nicholas Parrot of Hancock, Maine, a parent of three highly gifted children and an adult with many gifts herself. We are grateful, too, for the comments of the teachers and administrators enrolled in the Gifted Institute during the spring of 1979, as well as for the comments of those teachers who worked with these materials in the fall of 1979.

We extend special thanks to Patricia Tuttle and Rosanne Becker for their extreme patience and endurance during the many writing sessions involved in the completion of this work.

CHAPTER 1.
RATIONALE FOR SPECIAL PROGRAMS FOR GIFTED AND TALENTED STUDENTS

Gifted and talented individuals have *special characteristics* that usually are not addressed in most classrooms. These students need the opportunity to interact with each other, to work with materials which challenge their abilities, and to develop those abilities without curricular-imposed limitations. Many believe this can be accomplished only if they are provided with *programs designed* for their special characteristics and needs.

Before implementing a program, however, developers should have a clear rationale from a positive point of view, illustrating how the institution of a program for the gifted and talented will benefit the individual student, the school system, and society at large.

BENEFITS TO THE INDIVIDUAL

Most statements of general goals of education contain the concept of differentiating instruction to meet individual needs and abilities of students. This goal has been the basis for much of the work with handicapped students and the learning disabled. Although a great deal has been done by such educators as E. Paul Torrance, more remains to be done in teacher training, materials production, and program development to meet the needs of gifted and talented students. While these individuals will differ greatly from each other, there are some general characteristics of this group which call for the formation of special programs to meet their needs and interests. William Vassar has cited the following needs of gifted and talented which should influence program development:

The gifted and talented need to:

- use, develop, and understand higher mental processes.
- interchange and dialogue with their intellectual peers (those with similar interests, talents, etc.).

- have the time, space, and staff necessary to assist in the development of their outstanding ability.
- understand, appreciate, and study the diversity among individuals.
- have available an appropriate identification process and access to specialized counseling.
- learn to develop life styles commensurate with their particular profile of abilities and talents.
- have the opportunity to assess their unique talents and interests. (15)

Characteristics and Identification of Gifted and Talented Students discusses the characteristics of the gifted. Some of these characteristics such as the following are often ignored or even penalized within the regular classroom setting:

- Divergent thinking and ability to perceive unusual and broad relationships
- Different time/space perspective
- Variety of valid alternatives from which to select careers
- Divergent modes of responses to problems
- Persistence of goals and a need to delve deeply into problems of interest
- Questioning, often critical, attitude

In addition to the necessity of developing a program to allow these characteristics to benefit the learner, there is also the obligation to offer learning experiences which provide a challenge for gifted and talented individuals. Too often the materials and instruction are far below the capabilities of these students. Neither granting high grades nor commenting that the individual is not performing up to potential provides a solution. With respect to the individual who consistently performs at the top of the class without real challenge, James Gallagher draws an analogy to a talented high jumper who is required to jump at only two or three feet:

> He can soon get tired of such easy work and will certainly develop sloppy, and poor habits that will ill serve him when he, in fact, is finally challenged. (4)

When gifted students sometimes fail to complete even the assignments that are far below their capabilities, the teacher may see the solution to this situation as enforcing the completion of the work assigned before granting any special accommodations for such students. The potential of these individuals will not be developed in this way, however, because the problem lies not with the required work but with the program itself. Since gifted students in many cases have already mastered the concepts and skills in the regular curriculum, they may see little value in going through the steps again. Consequently, they may not do all the work and as a result may receive average or poor grades. The loss is not only the effect of poor grades on future academic experiences, but more importantly the retardation of learning. Given a program which provides instruction commensurate with their learning styles, characteristics, and abilities, these individuals will reach far beyond the "regular" curriculum.

BENEFITS TO SCHOOL AND TEACHER

A special program for gifted and talented students often benefits the entire curriculum and atmosphere of a school, depending, of course, on the involvement and cooperation of the staff throughout the school. Individual teachers who see such a program as a positive step tend to relay this attitude to their students who, in turn, may also take pride in the program, even if they are not directly involved in it. Usually, however, most students are unconcerned about academic programs and see everything in the school system, except lunch and athletics, as "just education." The enthusiasm and attitudes of those in the gifted and talented program may permeate a school if students are allowed to share their enthusiasm and interests. This atmosphere can help counteract the anti-academic tone that pervades many of our public educational institutions.

Although many teachers envision the removal of students with exceptional ability as a loss to the overall instruction of the class, the reverse may be true for the following reasons:

1. This separation lessens the range of intellectual and reading abilities with which the teacher has to contend. In most classes the abilities range from 70 to 140 in IQ with an even wider gap—perhaps as many as eight levels—between the poorest and the best readers. In an effort to provide instruction at all levels many teachers group students, provide individualized instructional programs, or teach to the average and try to tutor those who fall behind. With a smaller range the teacher can devote more time and effort to various groups within the class.

2. The presence of these extremely able pupils is often frustrating as teachers find they are unable to provide sufficient motivation and flexibility for them to pursue their interests in depth. Since much of the teacher's time is devoted to instruction of basic skills at the elementary and middle school levels and knowledge of content at the high school level, little opportunity exists for work with those students who are far beyond such instruction. In addition, few teachers at the elementary levels have the depth of knowledge in different content areas to provide gifted learners with adequate resources. These situations can be a continual frustration to the conscientious teacher who feels the need to provide legitimate educational experiences for all. A program which provides opportunities for the gifted to develop their potential can alleviate this source of teacher frustration.
3. Sometimes when the gifted students are separated, other students begin to play a more active role in the classroom. Having relied on the gifted for responses, these other learners now find they have to provide the greater part of class participation. They may also develop more confidence in their own abilities as they begin to assume new roles in the classroom vacated by their gifted peers.

BENEFITS TO SOCIETY

Although it may be difficult for some to imagine a young student as an adult, it should be kept in mind that the gifted and talented individuals currently going through our educational institutions are the probable leaders of our society in the near future. Indeed, as has frequently been stated, these young people are our country's greatest resource for they are the ones who will shape our institutions, values, and cultures. We educators, then, should provide positive vehicles to help them assume productive leadership to benefit themselves and society to the maximum of their potential. Too often, however, their progress is impeded when they are forced to maintain the same rate and to follow the same route as everyone else progressing slowly through the academic hierarchy. Furthermore, in our society most of those who assume leadership roles follow professional tracks, forestalling their entrance into a socially productive stage until the late twenties or early thirties, having continued their studies through advanced academic and medical degrees. To permit these individuals to be of maximum service to society educational programs are needed which allow them to enter productive stages earlier and which encourage meaningful productivity throughout the educational process.

In addition to helping gifted and talented individuals achieve productive stages, we should also endeavor to provide experiences which will help them acquire vital skills, concepts, self-awareness, and social understandings. Eliot Wigginton, President of Foxfire Fund, Inc., an educational organization in Georgia that advocates student-initiated learning and community-based education, reflects on the role of the teacher:

> The products and the activities are real, believing as we [at Foxfire] do that the best way to teach and hone the skills we want our students to have (whether grammatical or mathematical or physical or analytical or legal or creative) is by plunging them into real work that requires those skills. . . . If it were put into the form of a directive that all our staff members were to follow, it would go soemthing like this: Before you start to do anything related to your work with this organization, ask yourself first why a student is not doing it instead. If you don't have a good reason, then go and find a student—preferably one who has never done it before. . . . That's not the lazy way out. In fact, it's the harder way out. The job often takes longer. Mistakes are made. That, of course, is why an adult in most organizations usually does the job instead. Rule: An adult who habitually says, "This is a job that must be done, and must be done correctly and well, and therefore I must do it myself," must never be allowed to be a teacher. The only things left in his world for students to do are menial, meaningless tasks and exercises that have no real bearing or real consequence in the real world. A school full of teachers like that does not graduate competent, responsible, self-confident, sensitive seniors. Ever. Except despite that school. Rule: We have to have more confidence in our students than they have in themselves. (16)

Throughout most curricula emphasis is on acquisition of skills and knowledge. At the higher levels of learning, problem-solving techniques are stressed so that individuals will be able to cope with situations which may confront them outside school. For potential leaders, however, this approach is not sufficient.

We do not want individuals who can just solve everyday problems; rather we need those who have the ability to perceive potential problems before they become insurmountable. We need problem finders. As Gallagher points out:

> The computer world that lies just over the horizon can easily handle the memory and problem-solving aspects of our problems, but the computers cannot, as yet, choose which problems are important and need attacking. Problems such as population control, nuclear power, and poverty need to be seen far enough down the road so that the reactions to them are planned and not hastily improvised. (4)

MISCONCEPTIONS

Besides explaining the benefits of a special program for the gifted and talented, the developer should also be prepared to face the misconceptions and unstated fears which may threaten its implementation. Before the program may be effectively developed, several misconceptions and fears should be acknowledged and addressed. Otherwise they may arise at a later, more critical time and bring about the downfall of even the best designed program. Awareness of common misconceptions and concerns should help program developers anticipate potential difficulties and respond at the appropriate time.

When discussing the implementation of programs for gifted and talented students, it may be necessary to correct several erroneous beliefs people hold about these programs.

Misconception 1. The gifted are already provided for.

Critics of special programs often claim that too much money is spent on exceptions, that enough has already been done for the gifted or bright student. Many believe schools have already instituted programs for the gifted and that the real neglect is with the average learner.

The group that should and does receive the most attention is the "average." Nearly all of teacher training concentrates on preparing the teacher to instruct the "typical" class of "average" students because this is the group most teachers have or will have in their classes. Most of the materials purchased for instruction are directed at "average" students because they constitute the bulk of the school population. Finally, most of the published curricular materials are designed for "average" students because this group encompasses the largest and most profitable market. (15) Perhaps not enough is being done for the "average" pupil, but most resources are already being focused in that direction.

In 1972 the U.S. Office of Education concluded that the federal role in providing services to the gifted and talented was "all but non-existent." The report found that twenty-one states did not provide any services for their gifted, and no state provided for a majority of its gifted. When elementary and secondary school principals were asked about programs for their gifted, 57.7 percent stated they did not have any gifted students in their schools. The report concluded that at least three-fourths of the gifted population in the United States receives no special attention of any kind. (2) According to Dorothy Sisk, former director of the U.S. Office of Gifted and Talented, the situation has not changed between 1972 and 1978. Even in 1978 only about 12 percent of the gifted individuals in our society were being served, and the federal allocation of funds for the gifted was minimal—approximately one dollar per gifted student. (12a) In summarizing the recommendations of the Council for Exceptional Children about education of the gifted, Zettel and Ballard state, "Most importantly, too many gifted and talented children are suffering from neglect that derives from the failure to provide the special educational support required to meet their unique learning needs." (17)

Misconception 2. The gifted will succeed anyway.

Although it is widely believed that special programs for the gifted and talented are unwarranted because these individuals will succeed on their own, the opposite is too often the case. Many gifted students do not succeed within the present academic setting; they drop out of school or fail to continue their education beyond high school. After studying the dropout rate of the gifted in Iowa in 1962, Green found that 17.6 percent of these students in the state were not completing high school. (6) A significant number of gifted students who remain in the system and who should be performing at the highest levels achieve only average or below average grades. In 1957, reporting his examination of the achievement of 251 gifted children, Miner concluded that 54.6 percent were working below levels of which they were intellectually capable, and that a majority of these students were working at least four grade levels below their potential. (17) Mary Meeker, Director of the Structure of the Intellect Institute, found in one school that A students had IQs of between 130 and 136, but students with extremely high IQs (140) had C averages. (8a)

These findings are not so surprising when we consider some of the personality and behavioral characteristics of gifted individuals—divergent and critical thinking and persistence in demands and questions. Many of these traits not only go unrewarded in classrooms but are often penalized as teachers sometimes regard them as unacceptable behaviors. This is borne out by the grades received by many gifted students and by the unreliability of teacher nomination of gifted students. (10, 7) In their investigation of the gifted in regular elementary classroom situations, Gallagher and Crowder found that these children were poorly motivated and frustrated by the rigidity and intellectual sterility of the regular classroom. (5)

While gifted and talented individuals often suffer in classes where no provisions have been made to accommodate their special abilities, they seem to succeed in special classes. In an extensive California study of 929 gifted students, grades 1–12, Simpson and Martinson found that those in special programs made significantly greater gains in academic achievement than those in regular classes. The gifted in special classes advanced an average of two academic years while the equally gifted in regular classes advanced only one academic year. (12) Even a gain of two academic years may fall below the capability of many individuals. In short, the gifted child may be able to maintain average growth if kept in a regular class, but the same child will probably not achieve full potential unless special provisions are made to accommodate and build upon her/his special characteristics. Indeed, without special provisions there may be regression. The lack of challenge and realistic goal-setting for the gifted may foster poor academic attitudes and lazy study habits that can further impede full academic achievement. The attitudes and habits instilled in the young become increasingly difficult to eradicate each year they are reinforced.

Misconception 3. The gifted student in a special program will have emotional and social problems.

Many people, including parents, teachers, and administrators, believe that the gifted and talented student will suffer severe problems with peers and self if set apart from agemates. Most research has shown this belief to be false. Rather, emotional problems are usually brought on by the frustration of ability. In her report for the U.S. Office of Education, Ruth Martinson stated that researchers have found that gifted individuals who participated in special programs did not suffer social or personality problems, become conceited, or have additional health problems. (8) Walter Barbe, after surveying graduates of Cleveland's Major Work Program, found that participation in special classes for the gifted helped a majority of these individuals adjust to different groups. (1)

One cause of the misconception that gifted persons in special programs will have emotional and social problems is the story of William James Sidis, who entered Harvard College in 1909 at age eleven and died alone at age forty-six, having failed to achieve the heights portended by his giftedness. After researching this story and the lives of other gifted individuals, Kathleen Montour concluded that Sidis's tragedy was unique and that many other gifted persons who are allowed to proceed at their own rate and in accordance with their own goals lead successful and happy lives. (9) Cecelia Solano, who also explored the relationship between precocity and subsequent achievement, concluded that gifted and successful adults can continue to demonstrate exceptional abilities and success, especially if their achievements are viewed in relation to their own goals. (13)

Misconception 4. Special programs benefit only the participants.

Perhaps the greatest stumbling block to the initiation of programs for gifted and talented is the belief that these programs will serve only the top three to five percent of the community and will not add anything to the education of the majority of children. Indeed, many believe that if the gifted and talented are separated, other students will suffer without their input.

First, in many situations where a program for gifted and talented exists, the total atmosphere and learning process throughout the school is improved.

The Delphi Program in Greece, New York, is a semiseparated program beginning in fourth grade. Students are homogeneously grouped for the academic studies and heterogeneously grouped for the rest of the day. A few of the Delphi students became interested in whales and began to investigate the problem in depth. As a result of their enthusiasm, interest, and continual sharing with everyone in the school, many students outside the Delphi Program have also taken a strong interest in the "save the whale" campaign. The interest has resulted in letter-writing campaigns, art projects, and extensive outside reading throughout the school.

Second, the removal of the gifted and talented individuals from regular classes does not necessarily detract from the total instruction for the other students. Actually, removing gifted children from a regular classroom may result in the stimulation of new leadership among students previously overshadowed. When some students know most of the answers and are highly verbal in their responses to questions, many other, less confident students may be reluctant to demonstrate their knowledge or they coast, relying on others to give the answers. By allowing the extremely able students to participate in their own programs, other students will have more opportunity to participate actively in the regular classes designed for their particular characteristics and learning needs.

Misconception 5. If gifted and talented individuals are selected for a special program, they will become elitist "snobs."

This situation does not usually occur because most students tend to regard such a program as just another vehicle for education. In a survey of student attitudes about inclusion in a special program for gifted and talented, Barbara Ford found that most students (86 percent) felt they were not treated any differently by their peers after inclusion in the program than before. (3) Sometimes gifted and talented students become less "elitist" when included in a special program because they find they do not have to be defensive about their abilities with their classmates.

> Jack and Dorothy were considered "snobs" by most of their classmates and their teachers during their first few years of school. Not only did they know all the answers, but they continually lauded this knowledge over the other students. Finally they were placed in a homogeneously grouped program for the gifted and talented. Within a few months they abandoned their elitist behavior and began to interact naturally and equally with most of the other children in the school, including those not in the special program. Apparently, according to their teacher, the elitist attitude displayed in the regular classroom was a defensive posture adapted to overcome their feelings of difference from their classmates. When they were placed in a situation where they could interact with intellectual peers, they lost the need to display their superior abilities to the detriment of others.

In summary, our society has not provided sufficient funding or programs for gifted students, either in comparison with the average student or even with other areas of exceptionality. Research has demonstrated that the gifted and talented student does benefit from special programs, and some evidence demonstrates that gifted individuals are penalized when not provided with special attention. In most cases, gifted individuals do not suffer socially, emotionally, or physically from placement in a program designed to help them achieve full potential. On the contrary, many educators believe that emotional problems will occur more readily if the gifted individual is not placed in a special program. Finally, a program for gifted and talented may help all students as it allows more pupils to participate and share in a wider variety of learning experiences.

UNSPOKEN CONCERNS

The preceding misconceptions present problems, but they may be overcome with direct replies. A more difficult resistance arises from those concerns and fears which remain unspoken. While the concerns exist, direct replies are difficult as few individuals will acknowledge them.

Unspoken Concern 1. We are averse to helping others become superior.

Our system is based on the principle that everyone is equal. Although this means that all people should have equal opportunities to achieve their potentials, it is often interpreted as everyone being the same. In his short story "Harrison Bergeron," Kurt Vonnegut illustrates the danger of this trend when taken to an extreme as those with above-average abilities are forced to remain average through physical encumbrances imposed by the "Handicapper General," Diana Moonglompers. While few would actually suggest going this far to maintain equality, some people are reluctant to allow individuals to move beyond the average in school. For example:

> When Bill entered school, he was excited about the prospects because he had been reading for two years and he could compute simple math in his head. His excitement was turned to anxiety as he soon learned that he would not be able to read in school for another year because reading was not taught until first grade. Even then he would be held back since he was reading books at the fourth grade level which he could not get until he was in fourth grade.

As Gallagher remarks: "To many people, there is something manifestly unfair about giving Cranshaw, a boy of superior opportunities and abilities, special help to do more with his superior abilities, when other children are still struggling to meet minimum requirements. To these people, it is disturbing that there is not a tidy balance sheet for life." (4)

Unspoken Concern 2. The individual with superior intellect will turn against humankind.

This apparently absurd statement has been perpetuated through several media, including novels, film, and comics, for many years. Frequently the villain in these dramatizations is either a twisted scientist bent on destroying the world for some pseudoscientific goal, such as bringing the dead back to life, or an evil genius striving to dominate the world. The hero, on the other hand, is usually an individual of average intelligence who because of superior strength and luck is able to overcome the villain and save humankind. Even historical accounts tend to emphasize geniuses who caused destruction above those who produced beauty. More of us are aware of Adolf Hitler and his exploits than of Albert Schweitzer and his deeds. The former is more dramatic and hence more exploited by the media than the latter. Consequently, this unconscious fear of superior intelligence is continually reinforced with few counterpoints.

Unspoken Concern 3. Gifted students will become independent thinkers and lose their respect for authority figures.

Although most teachers would hold the goal of educating students to be independent thinkers in very high regard, when it occurs many teachers and parents may block it. The student who continually challenges the teacher or the child who assumes too much responsibility too soon may encounter considerable difficulty in school and at home.

There may be a fear of loss of control over the curriculum if students are given opportunities to develop their own resources and program. Such loss of control presents two major problems for the teacher. First, without direct control over progress and rate, the teacher may not be able to cover all that is indicated in the curriculum guide and may therefore be in conflict with administrative forces. Second, many teachers enjoy their profession because of the opportunity to give information and knowledge to others. These teachers desire the student to be dependent on them as intellectual resources. As students become independent in their needs, the role of the teacher moves away from the authority figure and the dependent relationship is threatend.

Unspoken Concern 4. Gifted students pose a threat to established values.

Gallagher notes, "In essence, the inquiring gifted child is the true challenge to the educator and his own values, and the society and its values." (4) Many of the leaders of radical movements and peace demonstrations during the late 1960s and early 1970s were gifted individuals following the dictates of the essence of democracy. In many cases, they were implementing rather than simply stating the principles upon which our society is based. Yet these individuals were also attacking many of the established institutions which had, in their view, violated these principles. Society did not readily accept them or their actions although many of their demands have since been acknowledged as legitimate, albeit late. Gallagher writes:

> It is easy enough to say that we believe in the democratic process and the free exchange of ideas. If we do believe them, then we have the responsibility for allowing these youngsters the opportunity to explore answers other than only those which we think are correct. If we are honestly committed to helping them think for themselves, then we cannot impress upon them only our own concepts of what is right or what is wrong. (4)

The foregoing are a few of the misconceptions and concerns which may be encountered. In particular situations other questions, misconceptions, and unspoken concerns will exist. In addition, some people have such deep-seated feelings against special programs that they will not accept any answer to their questions. Although developers may not be able to anticipate all objections which might be raised, they can respond intelligently and forcefully if they have formulated a rationale focused specifically on their own situation.

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CHAPTER 2.
PROGRAM DESIGN

This chapter discusses the various organizational structures designed to meet the needs and to accommodate the characteristics of gifted and talented students. These structures may be divided into three general categories: totally separated, semi-separated, and integrated. Placement of a specific program within one of these three categories is determined by the amount of time the individual student spends with other gifted and talented students who have also been selected for the program. Following this discussion three approaches to programming for the gifted and talented are highlighted: *acceleration, enrichment,* and *counseling,* which may be embedded in other structures.

One of the basic assumptions underlying most of these organizational designs is that gifted and talented students should at some point be grouped together to provide for interaction and productive cooperation. While research in homogeneous grouping has been inconclusive, some studies have indicated that it is successful for the gifted, especially if provided across age groups and accompanied by special teacher training and preparation for the particular group. After reviewing research in this area, Ruth Martinson concluded: "Those who oppose (homogeneous) grouping have relied on opinion rather than on evidence. Recent studies have shown that administrative arrangements (without curricular modification) for the gifted as such produce no change. Any plan must include active and appropriate intervention to succeed." (10) Without materials, curricula, and instruction different from that found in most regular classes, the homogeneous grouping programs may be little more than administrative pipedreams. In programs where these provisions have been made, some researchers have found that the gifted in homogeneously grouped situations fare better than in heterogeneous classes. (17)

Other educators, however, question the practice of homogeneous grouping for gifted and talented. Halbert B. Robinson, for example, states, "The notion that mentally gifted children constitute a reasonably homogeneous group who possess a high level of general intelligence is a gross oversimplification." (16) These individuals differ greatly from each other not only in interests and personalities but also in areas of superior abilities. "Homogeneous" is actually a misnomer but is useful if all the limitations are realized. An individual may be identified as gifted and talented and effectively grouped to provide specific kinds of instruction and experiences geared for particular characteristics and abilities. Even this resultant group, however, is not "homogeneous" in the strict sense of the word as its members are not all the same. Rather, they constitute a group of students who have been selected from the general population on the basis of specified characteristics pertinent to a particular program. Within this group each member still maintains a wide range of diverse interests, attitudes, and areas of expertise which should be taken into account when designing curriculum. In short, gifted and talented individuals should be grouped in specific areas to provide for appropriate interaction and to focus on particular levels of skill development and content coverage.

In addition to considering the question of homogeneity and time, the developer should note that the administrative design must be selected not only for ease of implementation but also for its relationship to the other components in program development: goals, characteristics of the population, selection process, curriculum, and program evaluation. This design should serve to facilitate the acquisition of the concepts, skills, and understanding that will help the individuals in the program to fulfill their potential. To do so, all the components have to be taken into account throughout the continual development and modification of any program.

One factor which should be taken into account when selecting a design is that of the student's personal time. Although the gifted possess superior abilities in specific areas, they still have other interests and needs beyond the educational experience. They are *children* who are frequently so intensely involved in many activities in and outside school that there may not be a spare moment in which to schedule another activity.

Keith, age eight, guards his free time ferociously so that he will have time to play, to watch television, and to read on his own. In making a decision about participating in a special program, Keith sometimes chooses not to do so because of conflict with his personal interests. Such a reaction may account for some frustration in teachers and administrators when an outstanding student does not participate in their program.

Consequently, when asking students to participate in a special program, we should realize the possibility that they are being asked to sacrifice time when they might be involved with other activities.

TOTALLY SEPARATED DESIGNS

Programs in which students are homogenously grouped for *all* their instruction in a defined area of ability—academic subjects and visual and performing arts, for example—are defined as totally separate. In some situations students receive instruction as a separate group in all areas, including the specific one defined by program goals. Schools such as the City Honors School in Buffalo, New York, Hunter Elementary and High School and the Bronx School of Science in New York City, the Magnet School in Dallas and the Houston School for the Visual and Performing Arts in Texas, the Major Work Program in Cleveland, the Pineview School for the Gifted in Sarasota, Florida, and the Mentally Gifted Minors Program in California establish entrance criteria for students within their geographic region and gear instruction throughout the entire school to benefit the gifted and talented. In other totally separated designs, students are homogeneously grouped only for the specific area and heterogeneously grouped for all others, receiving separate instruction in the defined area and participating in other classes with the rest of the student body. For example, in the Delphi Program in Greece, New York, students are selected to participate in a self-contained class for their academic experiences, but they are integrated with the rest of the school for other activities. Also, the SMPY (Study of Mathematically Precocious Youth) Program at Johns Hopkins University provides special acceleration in mathematics while students may follow a regular curriculum in other areas; and the Governor's Honors Program in Georgia offers a career education and futures emphasis. (18a)

In other situations extended blocks of time, such as weekends or summer, are set aside for the program. The gifted in these programs receive specialized instruction only during those times and are usually integrated with other students during school hours. Perhaps the most firmly established weekend program is the Saturday Workshop of the Gifted Child Society of New Jersey. Summer programs also attempt to accommodate gifted and talented individuals as a group. The Governor's School in North Carolina, for example, selects students from throughout the state to participate in special summer experiences in various academic areas. Other summer programs such as those of Horizons Unlimited in Keene, New Hampshire, the Center for Creative Youth in Middletown, Connecticut, and the USDAN Program in New York emphasize creative and productive abilities. The Gifted Student Institute in Arlington, Texas, conducts summer programs throughout the United States and Mexico. Such programs usually identify individuals in specific areas of giftedness and then provide instruction to help them achieve their potential in these areas.

SEMISEPARATED DESIGNS

Students in these programs receive instruction in both heterogeneous and homogeneous groupings. In many instances they participate in regular classes for most of their instruction, but they are encouraged to devote some time—a free period, after school, or part of a day once a week—to additional experiences within a particular area of instruction. Throughout the rest of the time they receive instruction in that area in the regular classes. In some of these situations students are "pulled out" of their classes or released from school for short periods during the week for supplementary or extra instruction. These special classes may be handled in several ways: by itinerant teachers trained to work with gifted and talented, by mentors, or by other individuals with expertise in a particular area. In any such situations the developer should strive to maintain close communication between the teacher of the special class and the teacher of the regular class; otherwise, severe problems may arise. First, unless the special teacher and the regular classroom teacher interact and communicate effectively, the student may be penalized for participating in the program by being given extra work requirements to "make up" work missed in class. Second, some classroom teachers may feel threatened by having "experts" take children out of the class for special programs and their attitudes toward the program may be communicated to the students involved. Third, untrained teachers of the special class, such as mentors, may not fully understand the purpose of the program or the characteristics of the students and may consequently fail to provide an appropriate experience for them. The interaction between the special teacher and the classroom teacher should help each one provide appropriate instruction for the gifted and talented individuals in the program as they share information about materials, curriculum content, and approaches. It should also help to avoid duplication of effort, to allow students to demonstrate their abilities, and to increase their learnings effectively and efficiently.

INTEGRATED DESIGNS

Some schools attempt to accommodate the gifted and talented without modifying the general structure. Instead, the classroom teacher provides individualized instructional programs and packets and special projects. To provide a productive learning experience for the gifted, these approaches often require a wide range of expertise in many areas, vast resources, and teaching techniques which many teachers feel they do not have. In these programs the classroom teacher may have to work with physically handicapped, emotionally disturbed, learning disabled, gifted and talented, as well as with the majority of students who fall within the range labeled "average." In such circumstances one or more groups may fail to receive the necessary attention and appropriate instruction. When a decision must be made about where to focus time and effort, the gifted and talented may be overlooked or given more of the same inappropriate work to keep them occupied.

On the other hand, some teachers have been able to develop expertise and techniques to work effectively with gifted in the regular class. The development of expertise has required extra training in identifying and working with gifted and talented and help with designing appropriate individualized learning programs. These programs, however, must be more than packets and solitary experiences because all students need the opportunity to interact with others of similar interests and abilities. (See Selected References, Gartner and Riessman.)

ACCELERATED PROGRAMS

One of the more controversial approaches to education for the gifted and talented is the accelerated program. These programs may take different forms, including early admission to kindergarten, high school, and college; rapid movement through grades; and the bypassing of grades in specific subject areas. Critics suggest that acceleration is not appropriate because the individual will not be able to interact socially and emotionally with chronological peers.

In 1938 Keys reported studies of the effects of acceleration on students who entered the University of California at age 16.5 or less compared with a control group who entered at age 17 or above. He found that the accelerated group was significantly superior in all areas of academics, including grade point average, scholarships, and academic awards. The accelerates held more class offices than the nonaccelerates and took part in more activities, including athletics. Finally, Keys found that those with the greatest number of behavior problems were either nonaccelerated bright students or accelerated students of average intelligence. (9) He concluded that given an IQ of 140 or above, a boy should enter college at about age 16 and a girl a half-year younger.

Years later, Morgan reaffirmed this finding. Comparing twenty-five gifted children five years after twelve of them had been accelerated in elementary school, she found the accelerated students to be superior to the nonaccelerated students in academic distinctions and social leadership. She also found that the accelerated students tended to show better social adjustment than the nonaccelerated students. (11)

Some educators have indicated that acceleration not only helps the gifted and talented, but that failure to accelerate may harm the individual. While citing the advantages of acceleration, Bish notes that emotional problems may result from keeping gifted students in classes that do not challenge them, and that acceleration tends to contribute to increased social maturity in gifted students. (2)

After surveying the research in acceleration, Stanley states that acceleration through college will not hurt the emotional development of the gifted individual. He concludes that nonacceleration often frustrates the learning pace of gifted students and results in emotional and academic problems. (18)

Gold, after reviewing the research in acceleration, concludes that when standards for acceleration are maintained, the accelerated individuals will probably reach higher levels of academic achievement and will not suffer more emotional problems than nonaccelerated students. He cautions, however, that acceleration should not exceed two years throughout the twelve-year program. (5) Gold also cautions against more acceleration without modification of the curriculum to meet the gifted individual's unique abilities. (4) Renzulli, too, warns against acceleration without modification, as instruction would probably not be geared to gifted individuals but rather to older students in a regular class.

"Then everyone ends up marching to the tune of the same drummer, albeit at a faster rate." (15)

Program developers considering accelerated programs should be sure to avoid the rapid grade-skipping that results in gaps in learning. Students should be considered individually, taking into account their social and emotional growth as well as their intellectual capacity. Havighurst suggests that acceleration is valuable for the truly gifted but would not be appropriate for average or bright-average students. (7) Keys suggests the best time to accelerate is in the elementary grades, as this timing will help avoid many of the problems that might hinder the accelerated individual. (5) This suggestion has been borne out by other researchers who found that students who were accelerated early maintained their superiority throughout their school years. (1, 8) Although Jackson and others see a potential difficulty with motor skills, they believe the alternative to acceleration of young gifted individuals is deceleration, where they continually lose opportunities to expand their abilities. (4)

In sum, acceleration can benefit the gifted individual, especially if care is taken with the selection and the program. It seems most advantageous to initiate acceleration early, selecting those gifted children who display social maturity as well as intellectual superiority. Finally, the accelerated program should provide more than just rapid movement through the grades. The curriculum should be modified to build upon the particular learning characteristics of the gifted and talented individuals involved in the program.

ENRICHMENT PROGRAMS

These programs usually involve supplementing the regular curriculum with activities that provide more opportunity to explore in depth the topic or area of study. The varieties of enrichment are limited only by the imagination, including independent study, supplemental learning kits or packets, field trips, and mentors, or full classes with extended opportunities.

Successful enrichment programs for gifted students usually require the student to move beyond the routine acquisition of knowledge to examine relationships among different areas or to delve deeply into a few areas. The less effective programs fail to differentiate among students and require the gifted to do the same as everybody else, only faster and more often. These programs do not take into account characteristics of the gifted such as their ability to draw abstract generalizations; to pursue topics of interest in great depth; to analyze, synthesize, and evaluate with little guidance, and to communicate ideas extremely well in a variety of ways.

Another problem with some enrichment programs for the gifted is that they may stop far below the levels of the students. While these programs may provide a variety of activities, too often they do so without sequence, direction, or ultimate goals, being merely a patchwork of good intentions. As T. Ernest Newland suggests: "The numerous, and soon monotonous, things which bright children can do as teacher aides, the number puzzles which may be solved, the wide variety of charts . . . to be constructed and maintained, and the like are but intellectual atoms which too often are more a gesture of a shallow educational diversion than of true enrichment." (12) Successful enrichment programs for the gifted and talented build upon their characteristics and challenge them to explore new areas of thinking and responding. Such programs should provide a sequence of experiences designed to promote continuous fulfillment of the potential of gifted students.

The mentor type of enrichment program has offered valuable learning experiences, but mentors must be carefully selected to challenge the learner sufficiently. Bruce Boston suggests that in programs that stress interaction between gifted students and mentors, emphasis should be on observation, perception, and problem finding and problem solving, rather than on verbal dissemination of information to the gifted individual. Boston also recommends that both the gifted student and the mentor should be specifically selected for the program and should be carefully matched. (3) Enrichment through mentor-pupil interaction may be especially valuable because it not only puts the gifted child in contact with a specialist in a given field, but it may involve the community in the program. Again, care must be taken with the pupil and mentor selection, and program developers must work with the pairs to be sure that the experiences fulfill the needs of the individual and the goals of the program. (See also Uhler [19].)

Other types of enrichment include accelerated subject matter units, team-teaching in specific areas, small group interaction, lectures and demonstrations, and instructional television programs. (13) Although these techniques may provide valuable learning experiences for all students in a class, including the gifted, unless the focus is on continuous development of abilities, the experiences may fail to provide the gifted individual with sufficient challenge and sequence. They may be interesting and fun but not so fulfilling as they could be with appropriate development.

COUNSELING

A vital but often neglected component of programs for the gifted and talented focuses on their emotions and attitudes, their affective needs. While important for all students, counseling and guidance for the gifted should incorporate areas unique to their specific characteristics (see *Characteristics and Identification of Gifted and Talented Students*) as well as general areas of guidance. For example, because the mental ages of gifted children exceed their chronological ages, they are often expected to be more emotionally mature than their agemates. "In fact, it is more likely that they will be somewhat more mature than chronological expectations but closer to (chronological age) than to mental age." (6)

Because the gifted and talented may be more mature than their chronological peers, they may be treated as adults when they are, indeed, still children. Such treatment and resultant expectations may create emotional difficulties not encountered by other children. Teachers, parents, and even counselors may fail to recognize these and other special needs of the gifted and talented.

Some particular areas of counseling needs for the gifted result from their special characteristics. First, many gifted individuals have difficulty selecting one area upon which to focus for future studies or vocation. While most of us have a limited choice since we can excel in only a few areas, some gifted individuals possess superior abilities and intense interests in many areas. This is advantageous on the one hand but anxiety-producing on the other, for the gifted individual may face conflicting pressures to choose various avenues. Some pressures lean toward those roads leading to monetary reward, others push toward those showing social conscience, and still others urge intellectual or artistic pursuits. Possession of abilities to excel in any of these areas thus may place the gifted individual in situations where choice is very difficult.

Other problems relate to peer relationships. The ability to understand concepts not envisioned by others may lead to a soli-

tary position where the gifted child may be the brunt of others' frustrations. The resulting personal anxiety and frustration may cause complete withdrawal from the the situation, open rebellion against peers and teachers, or denial of the abilities and maintaining a very low profile in the situation. Without help, the gifted individual may not be able to cope with the problem and, consequently, may not develop those talented characteristics and abilities. Also, some gifted and talented individuals need help in interacting with others whose skills are not so advanced as theirs. They have to learn not only patience and understanding of others, but, perhaps more importantly, a realization that everyone has something to offer and that we should seek out each other's strengths, helping each other by sharing interests and abilities. Peer relationships, especially among adolescents, are very important for emotional security. Because of their differences from average students, the gifted sometimes need more help than most in establishing productive relationships.

Again, because of their advanced skills, many gifted students acquire personal fears of failure. As Gowan and Bruch observe: "Superior students often desire to excel, but this very need may be so great that they will not risk a mediocre or less than first-rate performance. Perfectionistic tendencies can limit activities which require new experiencing, or in which they feel unsure of completing successfully." (6) This fear of failure may make it difficult for the gifted and talented individual to attempt any new solutions to problems or to try to solve problems that may be too difficult. To develop their abilities they need challenges and they should explore alternative approaches to problems. To do this, however, they may require help from parents, teachers, and counselors to acquire the security necessary for taking risks which may lead to failure rather than to success.

To help gifted and talented individuals develop emotionally as well as intellectually, teachers, counselors, and parents have to work cooperatively because all three groups are extremely important in this maturation process. Joseph Kandor of the State University of New York, College at Brockport, has suggested that this interaction may be facilitated by focusing on vocational choices using a decision-making model. (8a) For example:

1. *Identify a problem.* Focus attention on specific aspects of difficulties encountered in selecting a career or on specific career choices.

2. *Identify alternative solutions.* Brainstorm many ways of overcoming the problem or many possible careers; list all alternatives without comment.
3. *Evaluate alternatives.* Explore positive and negative aspects of each alternative, including objective areas, such as future market, and subjective ones, such as self-gratification.
4. *Select the best alternative.* Realize that this selection applies only to present conditions and that if the conditions change, the selection may be modified. The choice is only the best at the time, not the right one forever.
5. *Try the alternative selected.*
6. *Recycle the selection.* Reassess the legitimacy of the selection by taking it through the procedure again. The first choice may not necessarily be the best.

This approach to problem solving and decision making may be used productively by teachers, counselors, and parents as they explore problems with the gifted and talented.

The Guidance Institute for Talented Students (GIFTS) at the University of Wisconsin at Madison combines academic programs with guidance and counseling for the gifted. Philip Perrone describes the areas stressed in the counseling component.

> *Diminish self-dissatisfaction.*
>
> Being different, even if it is being talented, frequently leads to negative feeling or self-dissatisfaction. It is most important to prevent dissatisfaction from occurring by helping build a positive self-concept from the beginning. Frequently talented students learn they are different from peers after the first year or two of school when they become sensitive to self-in-relation to others. When self-dissatisfaction occurs, the teacher should look for significant changes in behavior such as excessive withdrawal or aggressiveness.
>
> *Improve self-understanding.*
>
> Children need to understand their talents—and their accelerated development—in order to enhance their self-concept (or diminish self-dissatisfaction). Most importantly, each talented student should understand the intent or degree of accelerated development and whether it is general or specific (i.e., manifested in all or one or two aspects of scholastic performance).

Stimulate interests, initiative.

In part, the talented student should be given some freedom but particularly in elementary grades and to a lesser extent throughout school, teachers must provide much of the materials or structure many of the learning opportunities. The teacher of a gifted student could be compared to a coordinator.

Foster conceptual development.

Accelerated development requires appropriate learning tasks to help talented students continue their growth. Both conceptual (Piaget & Kohlberg) as well as metaphorical (Samples) development should be developed. Teachers may have to become more familiar with the literature regarding metaphorical development and divergent thinking.

Foster motivation.

When defined as an inner drive it is necessary to provide opportunities for motivated students to set their own course to a certain extent. However, motivated students will need help in structuring appropriate learning opportunities and they will need feedback regarding their performance. Faculty can also teach students how to evaluate their endeavors thus freeing them from being totally dependent on others for feedback and evaluation.

Foster an internal frame of reference.

Developing a value system, an internal locus of control and field-independence are related terms. In effect knowing and testing oneself, being motivated and capable of self-valuation is representative of someone with an internal frame of reference.

Achieve effective peer relations.

The talented student may require more teacher assistance with this task than all the others combined. Group dynamics in the classroom are the teacher's responsibility. Effectively orchestrating a classroom situation with one or two pupils with accelerated development presents a challenge to any teacher. A beginning point is to have all students recognize and accept their somewhat unique levels of development similarly to how we accept (but maybe don't like) differences in height, weight, and speed afoot. (14)

Developers should carefully incorporate counseling into their overall program, stressing interaction among teachers, counselors, and parents. Although many assume that the gifted and talented have little need of it because of their superior abilities, some gifted individuals may actually have greater need of counseling than others. Gowan and Bruch cite two major reasons: "1) The gifted arrive at an awareness of human problems, of values questions, and of their need to search for meaningfulness; 2) such students develop socially and emotionally over a longer period of their lives and to higher levels of social responsiveness and responsibility. Their early levels of awareness make them especially sensitive to the emotional reactions of others and to their own self-reactions. Their longer developmental range suggests they have a longer need for accessibility to supportive guidance." (6)

Case Study

Ralph's parents discovered that he could read fairly well when he was four. By his fifth birthday he was not only reading books from the Random House Beginning Reader's Club, but he was also doing addition, subtraction, and multiplication of large numbers in his head. He could write a little, tell time well, and make change as banker in Monopoly games, which he usually won. This information was not shared with the kindergarten teacher the following year.

One month after kindergarten started, a confrontation occurred between Ralph's parents and the kindergarten teacher. The child's behavior at home had deteriorated and he complained about getting into trouble in school for "talking." Apparently Ralph was reading the directions of his kindergarten workbooks and doing the exercises while the teacher was explaining the directions to the rest of the class. Although the teacher did not realize he could read, his classmates did. Therefore they often went to him for help with the exercises and he got into trouble for talking. After the parent-teacher conference, a first grade teacher offered to work with Ralph in her reading group. This meant that the five-year-old boy had to go by himself across the school to another wing, crossing through the gym during basketball games or walking around outside the school. In spite of the severe winter weather, Ralph pursued the outside route so that he could participate in the advanced reading group. Later, he was confronted with a more difficult decision when his kindergarten class changed from morning to afternoon session. Either the boy had to leave his friends in kindergarten or forsake the reading program. He chose to stay with his friends. During another parent-teacher conference, the kindergarten teacher told his parents that Ralph was doing well in math because he could count to ten. At home, however, he was using flash cards to do addition, subtraction, and division problems. The teacher did not give the child more advanced work because his penmanship needed improvement.

When Ralph entered first grade and scored 90 on a group IQ test, his first grade teacher realized he had more ability than was reflected by this score and had him take an individualized IQ test on which he scored 170. While this score demonstrated his superior abilities, Ralph could not receive help from the special education teacher or from a tutor because they were designated for the learning disabled. He was allowed to attend some science classes in the upper grades two periods each week for six weeks. The work there, however, was similar to that in his own class. During first grade he worked ahead in math, completing the first, second, third, and half of the fourth grade math books; and he read the most advanced second grade book for his class. His friends liked and respected him, and he enjoyed school that year.

In second grade Ralph was permitted to join the reading group with which he had worked when he was in kindergarten. The teacher of this third grade group held high expectations for the child and provided him with a great deal of extra work, often on projects of his own choosing. In other areas of the curriculum Ralph worked with his classmates at the second grade level, except in math in which he worked with an easy third grade text. Finding the drill in the math series repetitious, he constantly worked slowly in that book. His frustrations seemed to carry over to his peer relationships and his study habits. He began to get into fights during recess, and his friends drew away from him or made him the brunt of their jokes. While his work area at home was highly organized and neat, his desk in school was in constant disarray. His relationship with his second grade teacher was antagonistic on both sides. When his parents had the boy diagnosed by a psychologist, the psychologist reported that Ralph worked with speed and intensity, was overly concerned about failure, became frustrated when his answers were not accepted, and had a superior attitude toward others. He recommended no acceleration at that time. Ralph was, however, allowed to begin the fourth grade math book, which he had nearly completed the previous year.

When Ralph began third grade, his family was in the midst of a crisis with his father seriously ill. His new teacher told the child his reading was not up to her standards, but he was allowed to attend a fifth grade math class where his work was exceptional. Yet when he returned to his third grade class, he was teased by classmates for having to receive "special help" in math. Finally, the child's frustration became overwhelming. No longer wanting to go to school, he seriously wondered what was wrong with him and began to talk about killing himself.

Outside school, however, Ralph won every honor available to a cub scout in his age range and worked on other projects for which he was too young to receive recognition. He also bowled and served as an altar boy. In short, the boy achieved recognition and satisfaction outside school and in the accelerated fifth grade math class, but he was continually frustrated in his third grade class. After a parent-teacher-principal conference, Ralph was allowed to move into a fifth grade program, leaving third grade and bypassing fourth grade completely.

The first two weeks of fifth grade were very difficult, both academically and emotionally. Having skipped fourth grade, Ralph had never had homework and had only begun to learn cursive writing. While the older children were impressed by his abilities on tests, they teased him about his writing and inability to complete his homework. Afer considerable emotional stress and with support from home, Ralph began to master the routine of homework and the other organizational skills taught in fourth grade. By the third week he was playing basketball with his fifth grade classmates and seemed to enjoy school. Apparently his classmates are beginning to accept Ralph as a peer socially as well as academically. At age eight, however, he is now beginning to outdistance them in math and is ready for concepts usually reserved for high school. His parents are concerned about the next step.

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CHAPTER 3.
CURRICULAR MODELS

Several educators have developed models to help teachers analyze and develop curriculum. Three sample models which teachers and program developers have found helpful for working with the gifted and talented are presented here: Bloom's "Taxonomy," Guilford's "Structure of the Intellect," and Renzulli's "Enrichment Triad." Since a thorough understanding of any of these models would require intensive study, the material provided will expose readers to the basic elements of each. For a more complete examination of the various models, the texts cited at the end of the chapter are suggested.

BLOOM'S TAXONOMY

In their effort to develop a system of analyzing classroom activities in relation to cognitive behaviors, Bloom, Krathwohl, et al. developed a taxonomy of educational objectives that has provided a foundation for curriculum development since 1956. (1) This practice has continued with programs for gifted and talented students with particular emphasis on the higher levels of cognitive behaviors. The six categories of the taxonomy represent a hierarchy of cognitive behaviors with each level incorporating all previous levels with the exception of evaluation which may occur at any level.

1. *Knowledge.* This category generally reflects recall of information. Verbs often used to describe student behavior reflecting knowledge are *memorize, recall, state, identify, recognize, list, match, name.* A suggested activity in this category:

   List the main characters and their roles in *The Hobbit.*

2. *Comprehension.* In addition to knowledge of ideas, this category incorporates those behaviors which demonstrate understanding of material. Verbs often used to describe student behavior reflecting comprehension are *paraphrase, translate, restate, summarize, illustrate, interpret, explain.* A suggested activity in this category:

   Summarize the conflict between Bilbo Baggins and Gollum in *The Hobbit.*

3. *Application.* As the title suggests, behaviors in this category demonstrate ability to apply understanding of concepts to other situations. For many students, especially the gifted, application may be a high-level behavior because a quality work will incorporate all other levels of the taxonomy. Verbs often used to describe student behavior reflecting application are *apply, produce, compute, solve, relate, use, construct, prepare.* A single suggested activity in this category:

   Using the events described in *The Hobbit,* produce a map tracing Bilbo Baggins's adventure.

   A more complex suggested activity in this category:

   Relate Bilbo Baggins's ambivalent feelings toward his adventure of the ring to your own feelings about the first day of class in a new school.

4. *Analysis.* Behaviors in this category involve the ability to break down and describe the components of an item and the relationships of those components to each other and to the whole. Verbs often used to describe student behavior reflecting analysis are *analyze, discriminate, compare/contrast, distinguish, detail, classify.* A suggested activity in this category:

   Compare and contrast the personality of Bilbo Baggins in *The Hobbit* with the personality of Frodo Baggins in *Fellowship of the Ring.*

5. *Synthesis.* This level of cognitive behavior requires ability to draw together ideas or materials from different sources to create something new. Verbs often used to describe student behavior reflecting synthesis are *produce, design, write, reorganize, create, generate, generalize.* A suggested activity in this category:

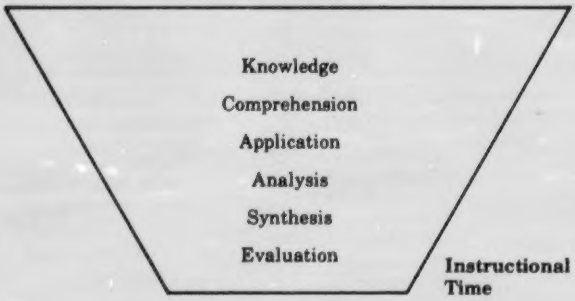
   Using the settings and personalities of characters developed in *The Hobbit,* write a new adventure for Bilbo Baggins.

6. *Evaluation.* Behaviors in this category involve judgments about value, purpose, or quality of an idea or item. Verbs often used to describe student behavior reflecting evaluation are *judge, criticize, assess, justify, appraise, rank, dispute.* A suggested activity in this category:

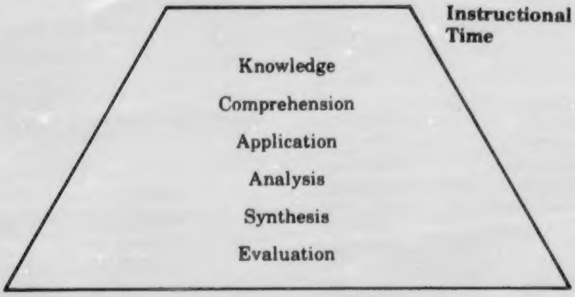
   Justify or criticize Bilbo Baggins's taking the ring.

Although instruction ideally should involve all students at each level of the taxonomy, in practice most class time is spent on acquisition of knowledge and demonstration of comprehension. Many educators suggest that for the gifted and talented a greater proportion of instructional time should be devoted to the higher levels of analysis, synthesis, and evaluation. This approach for gifted students, however, does not omit work at the knowledge and comprehension levels. These students require basic skills and acquisition of knowledge and demonstration of comprehension in order to operate at the higher levels. On the other hand, they should not spend so much class time on these skills as other pupils do since most gifted students are able to acquire knowledge and comprehend information quickly and independently. The diagram which follows illustrates the relative proportion of classroom emphasis on each level.

Average Students


Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation
Instructional Time

Gifted Students


Instructional Time
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation

In addition to the cognitive domain, educators, especially Krathwohl et al., have also developed a taxonomy for the affective domain to describe emotional and attitudinal development. (2b) While these two domains are often cited as separate entities, there is constant interaction between them. In developing a curriculum, teachers must consider student attitude as well as intellect. Frank Williams has illustrated this with a component of his "Thinking-Feeling" model. (5) (See also his *A Total Creativity Program for Individualizing and Humanizing the Learning Process* (6).) Under pupil behaviors, he cites the following:

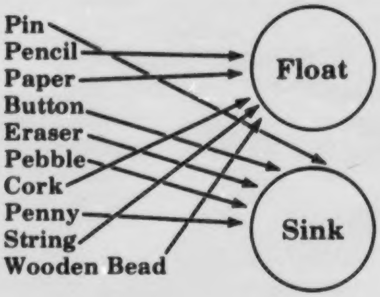
Pupil Behaviors

Behavior	*Meaning*
COGNITIVE—INTELLECTIVE	
FLUENT THINKING To think of the most—	Generation of a quantity Flow of thought Number of relevant responses
FLEXIBLE THINKING To take different approaches—	Variety of kinds of ideas Ability to shift categories Detours in direction of thought
ORIGINAL THINKING To think in novel or unique ways—	Unusual responses Clever ideas Production away from the obvious
ELABORATIVE THINKING To add on to—	Embellish upon an idea Embroider upon a simple idea or response to make it more elegant Stretch or expand upon things or ideas
AFFECTIVE—FEELING	
RISK TAKING To have courage to—	Expose oneself to failure or criticisms Take a guess Function under conditions devoid of structure Defend own ideas
COMPLEXITY To be challenged to—	Seek many alternatives See gaps between how things are and how they could be Bring order out of chaos Delve into intricate problems or ideas
CURIOSITY To be willing to—	Be inquisitive and wonder Toy with an idea Be open to puzzling situations Ponder the mystery of things To follow a particular hunch just to see what will happen
IMAGINATION To have the power to—	Visualize and build material images Dream about things that have never happened Feel intuitively Reach beyond sensual or real boundaries (5)

An activity exemplifying the interaction of intellect and attitude according to Williams's model might be the following:

TO ENCOURAGE: CURIOSITY AND COMPLEXITY
THROUGH: Arithmetic; Science
USING: Strategies No. 2—Attributes
No. 9—Skills of search
No. 14—Evaluate situations

The technique of mapping was used by a teacher to express categories and relationships. From among a random collection of items, some heavy and some light, *the children were to discover those that float and those that sink.* First they were *asked to guess* those that would float and those that would sink and *to test their guesses out* in a tank of water. After the items were separated into two categories of "sink" and "float," the children were to map their guesses versus their tests on paper. A map was explained as a representation of their guesses and tests by arrows drawn between each item to either category. For example:



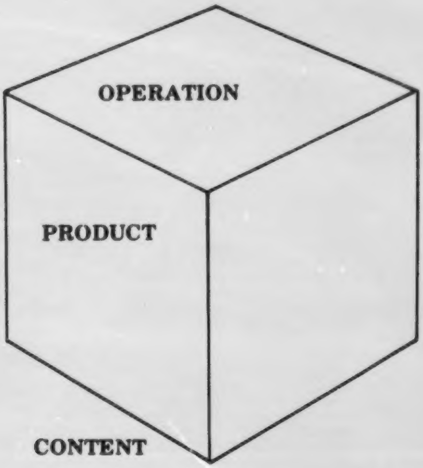
This lesson helped children discover categories and relationships as well as to verify their own hypotheses. (5:81)

GUILFORD'S STRUCTURE OF THE INTELLECT MODEL

Realizing that most concepts of intelligence are closely associated with intelligence tests and consequently do not encompass all of our intellectual activities, J. P. Guilford factor-analyzed intelligence tests and activities and developed the Structure of the Intellect model in *The Nature of Human Intelligence,* 1967.

(1a) This model delineates various aspects of intelligence along three dimensions, providing for isolation of different aspects of intelligence at each point of intersection. When illustrated the model is a block with three major dimensions:

1. *Operation*—describes the major intellectual activities through which one processes information from the environment.
2. *Content*—describes the forms information may take while in the environment.
3. *Product*—describes the form information takes as it is being processed by the individual.

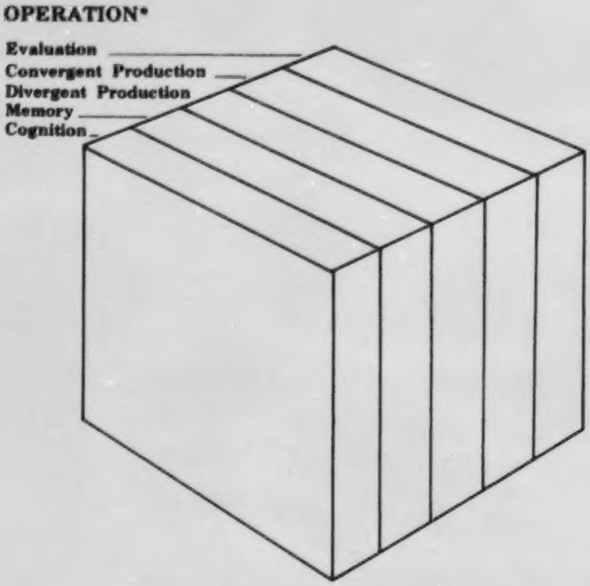


For each major dimension Guilford has then delineated several subcategories.

Operation, comprising the major intellectual activities or processes, has five subcategories:

Cognition. This requires recognition of information which may be conveyed in any form, e.g., dramatics, print, film, sound. A suggested activity in this category:

Show a child a picture of a common object that has a part missing and have the child identify the missing part.



Memory. This requires recall of information to which the individual has previously been exposed. A suggested activity in this category:

> Display a tray of objects and have the child list the objects after the tray has been removed.

Divergent Production. This requires the generation of a variety of ideas from a stimulus. A suggested activity in this category:

> Show a child a common object and have the child describe as many uses for the object as possible.

Convergent Production. This also requires the generation of information from a stimulus, but in this case the emphasis is on reaching a single, or conventionally accepted, result. A suggested activity in this category:

> Play the game Twenty Questions, in which one player

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* From *The Nature of Human Intelligence* by J. P. Guilford. Copyright © 1967 by McGraw-Hill Book Company. Adapted with permission of McGraw-Hill Book Company.

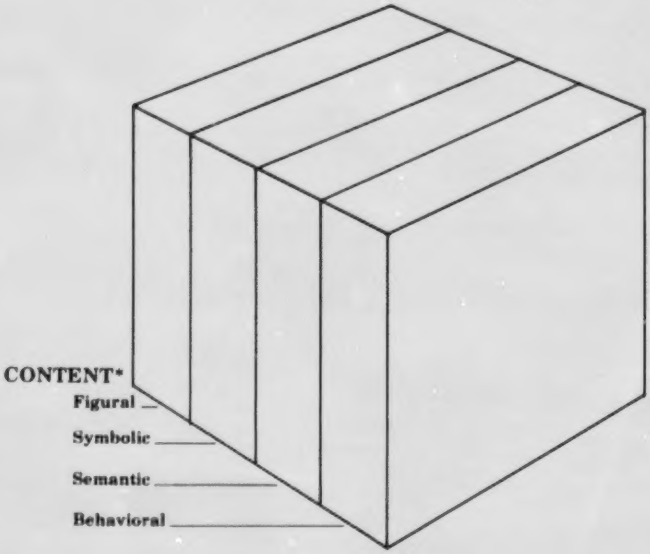
> attempts to guess an item which another player imagines. The guesser can ask twenty questions to which the other player replies yes or no. If, after the twenty questions have been asked, the first player names the item correctly, he/she wins. If not, the other player wins.

Evaluation. This requires making judgments according to an internal or external criterion. A suggested activity in this category:

> Decide whether or not a particular fictional character's action was consistent with the personality developed by the author.

Content, the broad classes or types of information an individual may perceive, encompasses four subcategories: (3)

Figural. This information is perceived through the senses. It may be in the form of shapes, touch, or sounds. A drawing of a person or object, for example, is information transmitted through a figure.



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Symbolic. This information is transmitted through a sign, something that is representative of the idea or feeling. A letter, a product logo, or a number, for example, is symbolic information.

Semantic. This information is transmitted through spoken, written, or imagined words. An individual may have the concept but may be unable to verbalize it.

Behavioral. This category encompasses information transmitted through the nonverbal behaviors of others. "Body language," for example, would fall within this area.

Product, the form that information takes as an individual processes it, has six subcategories:

Units. This type of information is processed singly. A unit can stand alone. The word "carrot," for example, is a semantic unit.

Classes. When units are grouped because they have one or more attributes in common, they form a class. "Vegetables," for example, is a semantic class.

Relations. Those ideas or concepts which underlie the connections between units to make them a class are relations. In the following example the relation may be a statement such as "B is the natural class to which A belongs."

a	b	a	b	a	b
peach	fruit	pea	vegetable	beef	______

Systems. More than two interconnected units form a system. The following example is a semantic system.

Solve the following problem:

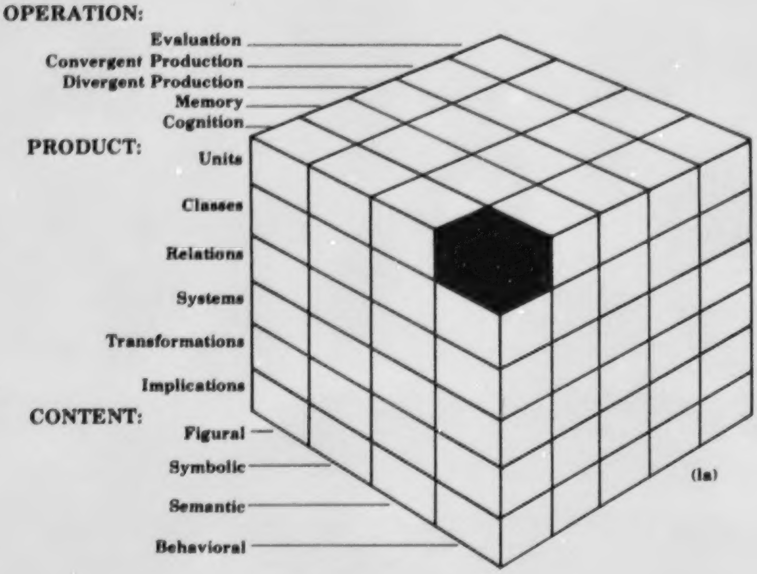
> If you can buy two colas for 15 cents, how much would eight colas cost?

This problem system involves two quantities of colas (2 and 8) and two quantities of money. One of the latter is given and the other is to be found by the problem solver. He can solve the problem if (1) he grasps the combination of related pairs so that he knows what numerical operations must be performed, and (2) he performs the operations correctly. (2)

Transformations. When information is changed or shifted in its function, it is semantic transformed. Puns, for example, are transformations. "A sign in a Texas restaurant reads, 'Remember the a la mode'."

Implications. These are expectations or predictions based on experience or previous information. Semantic implications, for example, often involve "What if . . ." statements. "What would happen if all the electricity were turned off for a month?" Science fiction lends itself to implications and is often a favorite area with gifted students.

PRODUCT*


OPERATION:
Evaluation
Convergent Production
Divergent Production
Memory
Cognition
PRODUCT:
Units
Classes
Relations
Systems
Transformations
Implications
CONTENT:
Figural
Symbolic
Semantic
Behavioral
(Ia)

The intersection of the three components of intelligence forms a unit of intellectual ability or functions. If an individual recognizes a suggestive wink, she/he is performing the operation of cognition with behavioral content for a single unit. Also, where divergent production (operation), semantic (content), and classes (product) intersect, the intellectual activity would indicate divergent production of semantic classes. The following is an activity illustrating this interaction:

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* From *The Nature of Human Intelligence* by J. P. Guilford. Copyright © 1967 by McGraw-Hill Book Company.

> Group the following words in as many different ways as you can: boy, toy, mother, boat, robin, alligator, and bottle.

The groupings are varied (divergent production), the words convey meaning (semantic), and the groups contain more than one word (classes). (See Activities for Teachers—"Curricular Models," pp. 121–25.)

The Structure of the Intellect model gives program developers a theoretical base to examine many aspects of intelligence not often included in most curricula because these areas are not identified by IQ tests. Some educators, such as Mary Meeker, have developed tests and activities derived from Guilford's Structure of the Intellect model.

For convergent production of figural systems a teacher might take a large map of the United States and cut out each state, making sure adjoining states are different colors. The student's task is to put the pieces back together to form the map of the United States. To accomplish this task the student has to select appropriate shapes of states and place them in correct positions in relation to the other states.

RENZULLI'S ENRICHMENT TRIAD MODEL

Joseph Renzulli of the University of Connecticut combined his research and experience with education of the gifted and talented to develop the *Enrichment Triad Model* for curriculum development. This model is based on several assumptions about programs for gifted and talented. First, gifted students demonstrate certain characteristics such as persistence to a greater degree than other students. Second, enrichment should not be relegated only to programs for gifted and talented students; all students should have experience with higher-level thinking skills, problem-solving activities, and creative/productive thinking skills. Third, the highly motivated gifted and talented individual should have the opportunity to pursue real problems in depth and to present results of that pursuit to a real audience.

As the title implies, the Enrichment Triad curriculum consists of three types of enrichment which are not necessarily sequential. The first is Type I Enrichment, general exploration activities. The purpose of these activities is to motivate the student and "to bring the learner into touch with the kinds of topics or areas of study in which he or she may have a sincere 'interest'." (4) Typical activities in this phase are interest centers, short discussions, films, and field trips. These experiences, however, should be the kind which could lead to more extensive research and involvement if the student wishes to pursue them.

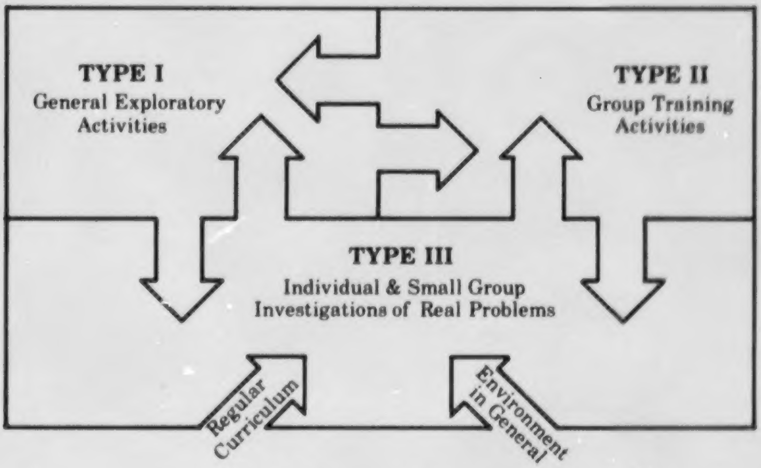
Type II Enrichment consists of group training activities. The pursuit of these activities is to teach specific skills, "to develop in the learner the processes or operations (the 'powers of mind') that enable him or her to deal more effectively with content." (4) Training experiences might, for example, involve problem-solving strategies, creative and productive thinking activities, as well as specific focus on areas defined in Guilford's Structure of the Intellect model. Activities in Type II Enrichment are designed to develop specific abilities and may involve a variety of games, discussions, and experiences aimed at particular kinds of skill development. Experiences involving Type I and Type II Enrichment should be available to all students, not just the gifted and talented, as motivation, breadth of experience, and skill development in the areas mentioned are appropriate for all, not for just a selected few.

Type III Enrichment, individual and small group investigations of real problems, however, is designed primarily for the motivated gifted and talented students. As Renzulli states:

> Type III Enrichment differs from presented exercises in several important ways. First, the child takes an active part in formulation of both the problem and of the methods by which the problem will be attacked. Second, there is no routine method of solution or recognized correct answer although there may be appropriate investigative techniques upon which to draw and criteria by which a product can be judged. Third, the area of investigation is a sincere interest to an individual (or small group) rather than a teacher-determined topic or activity. And finally, the youngster engages in Type III activity with a producer's rather than consumer's attitude, and in so doing, takes the necessary steps to communicate his or her results in a professionally appropriate manner. (4:30)

At this time students move from learning about something to producing new products. They focus on a problem of real concern to them, treat it as a professional in that field would treat it, and finally present their product to an audience which a professional would consider appropriate. (See "Sample Primary Investigation" on p. 113.)

Renzulli illustrates his model as follows, indicating that a student or group of students may move from Type I to Type III directly rather than progressing through a prescribed sequence. (4:14)


TYPE I
General Exploratory Activities
TYPE II
Group Training Activities
TYPE III
Individual & Small Group Investigations of Real Problems
Regular Curriculum
Environment in General

The Enrichment Triad Model*

The Enrichment Triad was established for work outside the regular curriculum. Tuttle modified Renzulli's model for incorporation within a full curriculum for gifted and talented students in grades four and five. These students are homogeneously grouped in self-contained classes for their academic experiences and heterogeneously grouped for all other experiences.

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* Figure 1 (page 14) from *The Enrichment Triad Model* by Joseph Renzulli (Mansfield Center, Conn.: Creative Learning Press, 1977).

Exploratory Activities are designed to introduce and expose students to a wide range of ideas, materials, and resources. Students are encouraged to pursue the ideas on their own. Also included in this phase are activities which help students acquire knowledge but not necessarily specific skills. Exploratory activities include interest centers, introductory lessons, field trips, independent readings, listening and viewing activities.

Training Activities are separated into two categories: skills and projects. Training skills activities are designed to help students develop specific skills within the context of the theme or unit. In this program the concentration is on skills in areas such as problem solving, creative thinking, and research, as well as those in academic areas and communication. Lessons in this phase either teach specific skills or require application of specific skills. Training projects are culminating opportunities, synthesizing the ideas and incorporating the skills involved in the unit. Students have a choice of projects through which they can demonstrate knowledge of content, effective application of skills, and ability to communicate effectively to an audience.

Investigations provide motivated gifted students with the opportunity to pursue real problems for real audiences. These investigations may emanate from either of the previous phases, but students usually do not embark on a full investigation until they have been through at least one training project. Investigations are conducted on a contractual basis with the teacher.

IMPLEMENTATION OF TRIAD

The following "unit" was designed for a homogeneously grouped middle school class. Although the activities are presented sequentially, the students and class moved back and forth among the three phases (exploratory, training, and investigations). The contract at the end provided a basis for an initial teacher-student conference.

Futures (Middle School)

Exploratory Activities

1. Set up UFO interest center with newspaper accounts, magazine articles, and books on UFO's such as *UFO*, *Chariot of the Gods*, and *Crash Go the Chariots*. Post questions such as Are we alone? Does another race have a master plan for us? Who profits from UFO sightings? Could have posters from *Close Encounters*.

2. Create a science fiction center with several popular classic science fiction works such as *Childhood's End, Foundation Series, Martian Chronicles, Dune Trilogy, 20,000 Leagues, Journey to the Center of the Earth,* etc. Post announcements of science fiction magazines and anthologies around the center. Post questions such as What makes a story science fiction? What kinds of trends are used most often? How accurate are their predictions? What if . . . ?
3. Set up an environmental center with texts such as *Population Bomb* and *Future Shock* on tables. Also include governmental statements regarding trends in population growth, environmental impact, etc. Have magazines such as *Whole Earth Catalog* and *The Futurist* around. Post new articles about the environment, including different viewpoints on issues such as creation of nuclear reactors.
4. Have students view films and television programs with futuristic themes and discuss the feasibility of the plots, themes, technology, or societies presented in them.
5. Bring in articles on legislation regarding the environment, e.g., preserving the "A" region as a wilderness area. Discuss them from different points of view.
6. Show advertisements which directly or indirectly affect the environment. Discuss their implications and potential effects.

7. Conduct some "futuring" activities such as
   - Genius Forecasting—asking experts what they think the future will be like
   - Gross Impact Analysis—analysis of effect of change in one area on aspect in another (e.g., rise in food production on population)
   - Brainstorming—generation of diverse ideas about the future
   - Delphi Technique—panel of experts responding to forecasts of future, first as individuals and then as a group, looking for commonalities
   - Scenario Writing—writing story about future based on present describing what has to occur to bring about that specific future life
   - Trend Extrapolation—taking current trend and projecting it to a future date.

8. Obtain and display information from such organizations as
   - World Future Society
     4916 St. Elmo Avenue
     Washington, D.C. 20014
   - Future Studies Program
     Hill House, University of Massachusetts
     Amherst, Massachusetts 01002

Training

General Skills Activities

1. Making predictions and drawing inferences from data.
   - 1.1 From given data students predict future outcome.
     - 1.11 Math—probability—work through experiment
     - 1.12 Values—look at progression of attitude toward women—what will it be like in five years? (read articles and history)
     - 1.13 Science—development of use of computer or TV
     - 1.14 Environment—alternate sources of energy
     - 1.15 Political—attitude toward taxation

2. Problem-solving activities.

   Following the pattern described in chapter 2 (pp. 32–33), students could work through a specific problem in small or large groups. In doing this, they may (1) select a problem they would like to explore (e.g., how to tap underseas resources); (2) brainstorm several alternative solutions to the problem; (3) evaluate the alternatives (perhaps after some research); (4) select the most feasible alternative; and, finally, (5) test the alternative in a hypothetical or model situation. After students solve the problem, have them analyze the process in small groups. Then as a class discuss the various procedures.

3. Creativity/divergent thinking.
   - 3.1 Looking at one thing and seeing another—viewing the film "Why Man Creates" and conducting exercises in creative thinking.
   - 3.2 Media—making a comic (drawing, slides, filmstrips)—extending current attitude, invention, or value. (Also develops narrative skills, discussion skills, etc.)

4. Decision Making.
   Have students play a game, such as The Planet Management Game, in which they engage in decision making and analyzing results of those decisions.

Skills Activities in Content Areas

- *Reading and Language Arts:* Students could read science fiction and articles about the future. In addition to gathering information from printed materials, they should also obtain ideas from films, television, and radio. On the basis of information from these sources students could describe aspects of the society of the future, e.g., eating habits, typical days in the life of ______, etc. Finally, they could pool their ideas and write short stories or scripts based on their discussions.
- *Social Studies:* Students could read articles or watch documentaries to obtain information about current trends. In addition, they could also interview leaders within the community who might be aware of the trends within specific areas such as economics, employment, education, or politics. Finally, students should pool their information and ideas, attempting to predict what may happen in specific areas in the future. These predictions should be based on past and present trends in the various areas.
- *Math:* Using information obtained from reading, viewing, and interviewing, students could develop graphs and charts illustrating trends in various areas. They could also conduct probability experiments so they can become adept at making predictions based on numerical data.
- *Science:* Students could explore several areas such as resource depletion, scientific progress, and medical advances in particuiar fields and form hypotheses about what will happen in the various areas in the future. They could also conduct experiments such as those involved in alternative energy sources to study future applications.

Culminating Training Projects

Students could work on extensive projects for the class or, even better, for different audiences such as other classes, professional organizations, community groups, etc. The following are some possibilities:

- Write stories about life in the future.

- Develop a "future" newspaper depicting events and attitudes that may logically arise in the future.
- Produce a dramatic presentation (radio, film, or television) depicting an aspect of the future.
- Write expository articles describing future trends and consequences of contemporary activities and attitudes (e.g., use of disposable containers).
- Design a city of the future, describing vocations, politics, home life, transportation, energy sources, etc.
- Write articles exploring specific areas of contemporary life as they might evolve in the future (e.g., education, voting, use of computers in the home, etc.).

Possible Investigations

Purpose: To delve into a problem of personal interest for a real audience. Following are several problems that some students may wish to pursue, together with potential audiences. Have students generate other problems.

Problem	*Audience*
How can we make the community aware of "future"?	—Area convention for other students
Series of presentations, articles, magazines, comics, etc.	—Community—sell the magazine or newspaper
What community action can be taken about (environmental) *problem* that may be disastrous to community in the future?	—Presentations to local groups
Science Fiction: short story, novel, comic book	—Community—sell to students, submit for publication
"Futures" periodical (newspaper or magazine)	—Community—students in other school (and own)
In-depth research and report	—Submit to journal

These brief overviews of some theoretical models have been included to demonstrate the variety of resources that a developer may draw upon for background in curriculum planning. The model or general plan for the curriculum, however, should be kept in perspective with the characteristics of the specific learners and teachers. It is possible to become so involved with a model and

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Contract

Name:

General Area: Future Study

Specific Area: (e.g., science fiction comic strip)

Description: An ongoing comic strip with main character who (give characteristics). S/he lives in 2000. In this comic various current values and attitudes will be explored as they might be extended to the year 2000.

Intended Audience: Elementary and secondary students—readers of the "Futures Newsletter."

Dissemination: Publication of newspaper.

Procedure and Resources:

Steps:
1. Analyze science fiction for techniques of character development and extrapolation of trends.
2. Study cartooning techniques.
3. . . . .

Read:
Lee, Stan, and Buscema, John. *How to Draw Comics the Marvel Way.* New York: Simon and Shuster, 1978.
Asimov, Isaac. *Foundation.* New York: Avon Books, 1970.
Franks, Betty Barclay, and Howard, Mary Kay. *People, Law, and the Futures Perspective.* Washington, D.C.: National Education Association, 1979.

Submission Deadlines:
Preliminary Proposal to Editor ________
First strip (draft 1) ________
First strip completed ________

Meetings with Teacher:
____
(date) (purpose)
____
(date) (purpose)
____
(date) (purpose)

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with distinctions among terms that the classroom activity and the student are lost sight of. There should not, for example, be so much concern with the placement of a worthwhile activity under "analysis" or "synthesis" that it is omitted from the curriculum because its classification could not be identified. Rather, those activities which have proved valuable should be included even if they are difficult to categorize. In addition, activities may cross categories within a model, and it would be a mistake to alter an effective activity to force it into a predetermined mold. Such dissection of experiences diminishes their value and may hinder transference of the skill from the classroom to other aspects of the student's life.

Finally, when developing a curriculum or learning experience specifically for gifted students, teachers should strive to differentiate work for these students from that which would be appropriate for other students. As Sandra Kaplan states:

> Curriculum for the gifted and talented can only be marked as such if it encompasses elements which distinguish it from being suitable for the education of *all* children. Curriculum for gifted students must be congruent with the characteristics that identify them as a distinct population. The answer to the question of why a student is gifted or talented is also the answer to the question of what type of curricular provisions should be developed for this child. (2a)

Again, the ultimate focus of instruction is on the characteristics of the learner. (See Supplementary Materials, pp. 91–94, for examples of differentiation.)

A carefully planned program will include general approaches, comprising enrichment and acceleration as well as individual and group activities. The curriculum, regardless of model, should also incorporate work in both the affective and the cognitive domains. But in reality such a comprehensive and inclusive approach to programming seldom occurs without considerable time and effort.

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CHAPTER 4.
TEACHER SELECTION

Thus far, students, program design, and curricular models have been discussed. A key element in the program remains, however: the teacher. Regardless of design and model, the ultimate impact on the student will be made by the teacher selected to modify and implement all other factors. Until recently only a few institutions have helped the teacher of the gifted. Although the number is increasing rapidly, still too few institutions of higher education have programs beyond a course or two for educating teachers of gifted and talented students. Most of the emphasis of these institutions has been on average students and on those with severe learning problems. As some of the problems of the gifted student become more evident, more courses and programs are being developed to meet this need. (See pp. 95–98 in Supplementary Materials.)

Since schools cannot rely solely on course or program background to highlight potential teachers of gifted and talented, they must determine characteristics and attitudes which would help indicate these teachers. Several educators have compiled lists to do so. Such lists, however, are often based more on intuition than on research. Also, as Tannenbaum of Teachers College at Columbia University suggests, many effective teachers of the gifted do not possess characteristics found on these lists. (1) A few teachers, for example, are able to work effectively with gifted students through some unknown tie that underlies the relationship even when the external characteristics seem to contradict this ability.

Project CITE-Gifted in Missouri (1978) conducted an extensive study to determine characteristics of teachers of gifted and talented and developed a competency-based program to help them develop appropriate characteristics and acquire necessary skills for working with gifted students. In reviewing the literature in the area, the CITE researchers arrived at several conclusions pertinent to teacher selection for the gifted and talented. In one area, they concluded that the classroom teacher does play an extremely important role in the education of the gifted. Contrary to many popular opinions, many gifted cannot succeed on their own and need specially trained teachers in order to benefit more fully from their educational experience. The study also found that educators in the field stressed characteristics such as high intelligence, intellectual honesty, nonauthoritarian attitude, flexibility, curiosity, and psychological maturity as important for teachers of the gifted and talented to possess. (1)

After reviewing the research and literature on this topic, June Maker cited the following teacher characteristics as generally recommended: high intelligence, flexibility and creativity, self-confidence, variety of interests, sense of humor, sympathy with problems of the gifted, self-understanding, love of learning, and facilitator rather than director of learning. Of all these traits, she highlights three as most important: high intelligence, knowledge of subject matter, and emotional maturity. (4) As Maker indicated, these characteristics would be highly desirable in any teacher, but they are vital in the teacher of the gifted. Since gifted and talented students tend to be persistent in their search for knowledge and especially perceptive of erroneous or superficial answers, the teacher of these students needs both the intellectual background to provide appropriate responses or direction and the emotional maturity to be able to cope with the superior ability and depth of interest of the students.

William Bishop explored the characteristics of teachers identified as especially successful by their gifted pupils. Many of his conclusions reinforce Maker's list: emotional maturity, preference for teaching the gifted, and intellectual superiority. He adds other characteristics, however: enthusiasm about the subject, pursuit of literary and cultural interests, businesslike classroom behavior, and preference for special educational provisions for gifted students. (2)

Some researchers have reinforced the necessity of special training for teachers who plan to work with the gifted and talented. In addition to the learning of methodology appropriate for these students, special training is also necessary to change teacher attitudes toward the gifted. Cecelia Solano found that unless teachers have had some experience with gifted students, or courses in teaching the gifted, they would probably hold a stereotyped image of individuals in this group. This image is usually negative toward gifted boys and positive toward gifted girls. (7)

Paul Plowman has suggested the following criteria for selecting teachers of the gifted and talented. (6) Although the list was developed many years ago, the needs have changed very little.

1. Teachers of mentally gifted minors should be:
   - 1.1 Creative in
     - 1.11 thought
     - 1.12 production
     - 1.13 classroom organization
     - 1.14 teaching methods
     - 1.15 materials
     - 1.16 experiences planned
   - 1.2 Well organized
     - 1.21 Deliberately advancing aspects of creativity and mental giftedness
     - 1.22 Using teaching methods, developing experiences, and employing methods of evaluation that are:
       - (1) consistent with general and specific program goals and specific purposes, needs, and interests of individual children.
       - (2) based upon a philosophy of education, principles of learning, a knowledge of social conditions, and awareness of relevant facets of personal, intellectual, and social development of each student.
   - 1.3 Enthusiastic—by example, instills a joy of learning, discovering, "self-starting," and sense of "mission" for personal growth and for improving society.
   - 1.4 Endowed with a sense of humor, empathy, and personal warmth that encourages gifted pupils to talk about, to think about, and reflect upon the things that are most important to them.
   - 1.5 Knowledgeable—Possessing broad knowledge, including superior knowledge in one field, an understanding of related fields, and insight into how knowledge from various fields may be applied in analyzing and in arriving at solutions to problems.
   - 1.6 Flexible
     - 1.61 In recreating and restructuring the physical environment
     - 1.62 In using materials and equipment
     - 1.63 In structuring and restructuring interest—learning—personality—developing groups and classroom experiences
     - 1.64 In planning lessons and in modifying lessons to capitalize on a "moment of" or opportunity for learning.

1.7 Aware of the capabilities and needs of gifted pupils.
1.8 Resourceful in searching for and obtaining special materials, in becoming acquainted with and using resource persons, and in locating out-of-school places where children and youth may have worthwhile educational experiences.
1.9 Providing special educational opportunities for each gifted pupil.

Taking suggestions from several sources, a list of characteristics of effective teachers of gifted and talented students has been compiled. The selection of teachers for a program, however, should be geared to the specific area or areas of giftedness involved in the program.

The effective teacher of gifted and talented students is—

- highly intelligent
- flexible and creative
- self-confident and emotionally mature
- interested in many areas
- knowledgeable in subject area (especially at the secondary level)
- businesslike in classroom behavior
- in favor of special provisions for gifted students
- alert
- well trained to work with the gifted and talented
- extremely professional in attitude and actions
- intellectually honest
- nonauthoritarian
- enthusiastic
- intellectually independent

The traits cited are not unique to the teacher of the gifted. Indeed, most would be valuable characteristics for any teacher. Some traits, however, such as self-confidence and high intelligence, are particularly important in classes for the gifted because of the intellectual challenge presented by these students.

In addition to checklists, the selection procedure should also take into account classroom environment and the relationship between teacher and student.

> We learn through experience and experiencing, and no one teaches us anything. But environments can. . . . If the en-

> vironment permits it, anyone can learn what he chooses to learn; and if the individual permits it, the environment will teach him everything it has to teach. . . . It is highly possible that what is called talented behavior is simply a greater individual capacity for experiencing.
>
> —Viola Spolin, quoted in
> *Reach, Touch, and Teach* by Terry Borton (3)

If talented behavior is related to an individual's capacity to take in and process experiences from the environment, then a major part of the teacher's task is to create safe, stimulating, open environments which encourage exploration, sanction risk taking, and do not penalize failure. The CITE report highlights some of the professional skills a teacher of the gifted and talented should possess in order to create an appropriate learning environment. The CITE researchers found that these teachers should be able to create an atmosphere of inquiry and problem solving, to integrate ideas, and to unify affective and cognitive domains. (1) Teachers of the gifted should also stress thinking and questioning activities, concentrating on exploration of ideas rather than coverage of content. Although they should have a working knowledge of a variety of curricular models (see chapter 3), teachers should use such models cautiously. They should be able to integrate procedures to facilitate work with problems in a productive manner rather than create specific activities just to satisfy components of a model or taxonomy. In selecting teachers to work with gifted and talented students, administrators should seek those who can create an atmosphere that frees the learner to cultivate an openness to experience, a willingness to push the edges, to risk, to see new insights along old paths.

To create and maintain such an atmosphere, the teacher must be able to establish a productive and secure relationship with the class. Henri Nouwen states:

> Our relationship with our students is first of all a relationship in which we offer ourselves to our searching students, to help them develop some clarity in the many impressions of their mind and heart and discover patterns of thoughts and feelings on which they can build their own life. . . . As teachers we have to encourage our students to reflection which leads to vision—theirs, not ours. (5:63)

LOCATING THE TEACHER OF THE GIFTED AND TALENTED

Administrators or selection committees use a variety of approaches to locate teachers for programs for the gifted. Perhaps the most common approach is self-selection supported by professional evidence. Some of this evidence may include participation in conferences and workshops on educating the gifted, formal course work in that area, extensive readings about teaching the gifted, and classroom performance reflecting the goals of the program envisioned for these students. While interviews or résumés may demonstrate interests and efforts, it may, however, be necessary to look beyond these indications for other views of the individual's ability to work with the gifted and talented.

Other methods for locating appropriate teachers may involve peer nomination, classroom observation, and administrative choice. A behavior checklist designed for the specific program may help with each of these procedures (see the list on p. 62 and also Activities for Teachers—"Teacher Selection"), as it would focus attention on abilities of particular relevance to the task. Such a checklist, in addition to the evidence just mentioned, would provide a more accurate indication of ability to teach the gifted and talented than arbitrary decision or seniority. Some general factors, however, such as general reputation or results of former students, should not be ignored. Certain teachers may not seem to perform the specific behaviors listed, but they do work well with gifted and talented students because of some underlying characteristics that may not be very obvious during a classroom observation or that may not appear on a behavioral checklist. Although the checklist may help to clarify some of the needs of the program and may serve as a valuable guideline for teacher selection, it should be used in perspective with other factors.

When a program for gifted and talented is envisioned, the search for appropriate teachers should be immediately initiated so that the teachers may participate in the development of the program. Since this search may not be possible because of lack of information about the program, it may be more advantageous to involve several teachers in the development stage and to select from that group the classroom teacher for the program. This procedure has the additional benefit of involving several people in the development even though all may not participate actively in the program after implementation.

One school system enrolled all teachers and administrators who might work with the future program for gifted and talented in a series of workshops devoted to designing and developing the program. Not only did this procedure give all individuals with possibilities of involvement in the final program a voice in its development, it also gave all participants an opportunity to observe themselves and others working with the ideas, approaches, and materials supporting the program. Since the workshops were conducted as part of a college course, the participants also received graduate credit.

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CHAPTER 5.
PROGRAM EVALUATION

As with other components of program development and design, evaluation should be considered in light of the total product. The type of evaluation conducted, the evaluator, and the procedures used in the evaluation depend on the goals and curriculum as well as on the purpose of the evaluation. This chapter discusses the purposes of the program evaluation, the issues in evaluation of programs for gifted and talented students, and the concept of using a variety of approaches to program evaluation. At the end of the chapter a specific example of an evaluation is provided. For a more complete examination of this topic, see Renzulli's *Guidebook for Evaluating Programs for the Gifted and Talented.* (2)

PURPOSE OF EVALUATION

There are several reasons for evaluating programs. First, a researcher may wish to determine the effectiveness of a given program as it exists without modification. Second, one may wish to describe a program to a specific audience, such as a school board, to justify requests for additional funds. Third, an evaluator may be interested both in the effectiveness of the program and in the ways in which it may be improved.

The purpose and type of evaluation will also affect selection of the program evaluator. Particular evaluators employ different techniques to fit the various purposes. The researcher, for example, would not modify the program while in progress, since it would affect many of the measures used on the problem situation and introduce unforeseen variables. The describer or fundseeker would probably not look for areas of difficulty, since they might reflect negatively on the effectiveness of the program and might endanger continuation of support. Ongoing improvement as well as final assessment are therefore recommended. In this way the evaluator makes suggestions for improvement throughout the procedure even though these suggestions may alter the structure of the program. Complete program evaluation should do more than just describe what is happening. As Reynolds points out, "The purpose of evaluation in education is simply to contribute to improvements in instruction, certainly not to justify projects." (3) Consequently the evaluator(s) of a program for gifted and talented should possess both knowledge of approaches and issues in educating gifted and talented students and knowledge of evaluation techniques.

Joseph Renzulli highlights the goals of program evaluation as follows: determining whether or not the objectives of a program are being fulfilled, discovering unplanned and unexpected results of the program, determining the effect of underlying policies and related activities on the program, providing continuous feedback about the program to participants, and suggesting both realistic and ideal program modifications. (2) Prior to evaluation of the fulfillment of objectives, the program evaluator should examine the relationships among the objectives, program goals, identification procedures, curriculum, and the unique characteristics of the gifted population selected for the program. All elements should reflect the special attributes of the gifted and talented students.

Some educators and researchers delineate program evaluation into two types: *formative* and *summative.* The main difference between the two lies in the purpose and timing of the evaluation. In general, *formative* evaluation focuses attention on improvement of curriculum or program while *summative* evaluation focuses on the effectiveness of a curriculum or program. Bloom, Hastings, and Madaus describe the two types as follows:

> Summative evaluation [indicates] the type of evaluation used at the end of a term, course, or program for purposes of grading, certification, evaluation of process, or research on the effectiveness of a curriculum, course of study or educational plan. . . . Formative evaluation is for the use of systematic evaluation in the process of curriculum construction, teaching, and learning for the purpose of improving any of these three processes. (1)

These types of evaluation, however, are not mutually exclusive. Both can perform necessary functions for the program and should be incorporated in the evaluation procedure. This would necessitate the involvement of *the program evaluator* throughout as the formative aspect occurs periodically while the program is in progress and the summative aspect is conducted at the end using data gathered periodically throughout the program. While the first type of evaluation helps to improve the program immediately by locating and aiding with specific problems that arise, the second type can give insights into the total program which may have been obscured by the daily routine or which may not have been evident through the use of the short-range instruments and procedures.

VARIETY OF APPROACHES

To examine the major dimensions of a program, educators should use a variety of evaluation procedures since different components of the program call for different techniques. For example, while growth in higher-level thinking skills may be evaluated through tests such as the Ross Test of Higher Cognitive Processes, these tests will not provide information about the quality of student projects; nor will they reflect classroom activity, nor student and parent attitude. Many developers in their desire for easily quantifiable information place a high priority on test results, leading them to an overemphasis on measurement of specific skill acquisition. This limited focus, however, will overlook important aspects of the program.

While some components of a program for gifted and talented may be evaluated through tests and analysis of student products, other areas, such as attitudes and opinions, may require the use of surveys and questionnaires. Some educators choose to use previously constructed instruments and others develop their own. All, however, should be careful to examine the selected questionnaires for relationships between items and program goals, making sure that all the appropriate questions are asked.

In addition to surveys and questionnaires, program evaluators often use information from classroom observations to help determine effectiveness of the program and achievement of goals. Since most educators agree that gifted students can engage in activities requiring more application, analysis, synthesis, and evaluation earlier and to a greater degree than other students, the classroom interaction should reflect activity involving these processes. Several observation instruments have been developed to help delineate the kind and amount of interaction and activity that occur within the classroom. Evaluators, however, should select these observation instruments on the basis of the goals of the specific program being evaluated; otherwise the results will not help describe the relationship between goals and implementation, which is, after all, a major purpose of program evaluation. Also, the rating on observation instruments should be consistent from one rating session to another. If raters interpret the items differently, the evaluator will be unable to assess the classroom behavior accurately. Finally, the observations of the classroom should be conducted in situations which reflect typical teacher and student behavior and which allow for adequate observation time. If the situations are atypical or the time too short, the results of the observation may provide erroneous information which could lead to inaccurate conclusions. Consequently, when selecting an observation instrument, evaluators should be concerned with applicability of the instrument to measure stated goals, consistency of observations among different raters, and representativeness of the situations in which the observations occur.

SPECIAL PROBLEMS WITH STANDARDIZED TESTS

Often educators use standardized tests, especially achievement tests, as part of the evaluation procedure. Such use of these instruments, however, may create a distorted view of the program: first, because of the tests themselves, and second, because of statistical analysis of these tests. Standardized tests are usually designed for the general population and consequently are inappropriate for extreme groups, such as gifted students. The differences between the general population and the gifted are reflected in the number of questions designed for each group. While the tests contain many questions that distinguish among most students, they contain few that distinguish among gifted students. This, in turn, makes it difficult for an evaluator to compare results from one gifted group with another gifted group or, perhaps more importantly, to compare results from a pre- with those from a post-test situation for the same gifted group. Consequently, growth of students in a program for gifted and talented is difficult to determine using these tests.

In addition to the relatively low number of questions for this group, there is also relatively little room for improvement for gifted learners. For example, students who enter the program at the 98th or 99th percentile cannot improve very much. Furthermore, many questions on standardized tests are actually in conflict with some of the characteristics of the gifted. One common characteristic, for example, is the ability to see relationships among diverse ideas. While the test presumes one correct answer for a question, these students can often envision situations in which several of the "wrong" answers could be correct. This problem is discussed in greater length in *Characteristics and Identification of Gifted and Talented Students.*

Statistically, standardized tests also present difficulties. A phenomenon called "regression effect" makes it unlikely that individuals who score extremely high on a standardized test will show gains on the test. The regression effect, in brief, means that there is a statistical tendency for extremes to move toward the middle range on repeated measures. Individuals who score very high on a standardized test, for example, will tend to score closer to the mean when taking the test a second or third time. This phenomenon, of course, further complicates evaluation of improvement or gain using standardized tests as the major source of information about the program.

SUMMARY

When evaluating programs for the gifted and talented, evaluators should take into account several factors.

1. The evaluation should focus directly on the major goals of the specific program even though measurements of these goals may be more difficult and complex than that of specific objectives.
2. Since in most programs for the gifted the learning revolves around classroom activity and interaction, the evaluation procedure should include an observation and description of teacher and student behavior and the relationship between this behavior and the stated goals. This observation should focus directly on the goals and objectives of the specific program.
3. Evaluators should be cautious about relying too heavily on standardized tests because these tests are usually designed for a different population. Although an increasing number of tests are being developed for gifted and talented, evaluators should examine them critically to determine the relationships between program goals, student characteristics, and test items as well as between the program and the norming populations. With these considerations, it is suggested that evaluators employ several procedures to give a clear picture of the program.
4. The evaluation should serve two functions:
    a) To continually modify the program to accomplish the goals more effectively

b) To assess the overall relationship between program goals, student characteristics, identification procedures, and curriculum, ultimately evaluating the success of the program in attaining its goals.

Example

The program described in the following example is one designed for intellectually and academically gifted and talented fourth and fifth grade students. While the students are homogeneously grouped for their academic studies in self-contained classes, they are heterogeneously grouped for all other areas, such as homeroom and special subjects. The identification procedure involved used information from several sources, including teacher recommendations based on behavioral checklists, IQ and achievement tests, and peer and self-nomination. The general curriculum followed Tuttle's adaption of Renzulli's *Enrichment Triad Model* (see chapter 3).

The program evaluator became involved with the program after the selection of students. In general, the purpose of the evaluation was to provide formative information during the year to modify strategies and curriculum when appropriate as well as to conduct a summative evaluation at the end of the academic year. Often, data gathered for the formative evaluation also helped draw conclusions for the summative report.

Early in the year the program evaluator and the curriculum coordinator explored a variety of questions that could be considered in the evaluation. After discussion with others, these questions were condensed as follows:

Attitudes

- Do parents of students in the program have a favorable attitude toward the program?
- Do teachers in general have a favorable attitude toward the program?
- Do students in and outside the program have a favorable attitude toward the program?

Curriculum

- Do the products of the students show superior abilities?
- Did the students acquire the basic skills and concepts taught in the regular program?

- Did the classroom activities reflect the program goals?
- Did the students in the program improve in ability to perform at the application and synthesis levels of Bloom's Taxonomy?
- In what ways was this program different from the regular program?

Consistency

- Were the various components of the program (goals, student characteristics, selection procedure, curriculum, and evaluation) consistent with each other?

To answer these questions the evaluator used several sources, including questionnaires, interviews, student products, classroom observations, and pre-post tests. In addition, he also analyzed the

Evaluation Procedure

	Attitudes Toward Program	**Curriculum**	**Consistency of Components**
Instruments	**Questionnaires:** • Parents of students in program • Parents of students not in program • Teachers in program • Teachers not in program • Students in program • Students not in program **Interviews:** • Students in program • Teachers in program	• Ross Test of Higher Cognitive Processes • Composition Test • Student Products • Checklist of basic skills and concepts • Florida Taxonomy of Cognitive Behavior (classroom observation) • Martinson-Weiner Rating Scale of Significant Behaviors in Teaching the Gifted (classroom observation)	• Chart of goals, characteristics, selection procedure, curriculum, and evaluation
Procedure	• Evaluation Committees (students) construct questionnaires • Evaluator interview teachers and students • Evaluator analyze responses in questionnaires (see previous discussion) and statements in interviews	• Pre-post administration of Ross and Composition Tests • Evaluator analysis of student products • Outside observation of classes • Comparison of gain scores on Ross and composition tests between control and program groups	• Evaluator analyze chart for consistency

components of the program to determine consistency. As part of the formative evaluation, the teachers met periodically with the administrative staff and evaluator to discuss curriculum and student activities. To use the evaluation process as a learning experience for students, the evaluator had student committees develop questionnaires for parents, teachers, and other students. The summative evaluation included data from the pre-post tests, classroom observations, questionnaires, and interviews. In addition, the evaluator compared pre-post efforts between gifted and regular groups and between gifted in this program and gifted in other programs.

The evaluator's final report to the school included an overview of goals and curricular approach, description of evaluation procedure, results by category and question, conclusions and recommendations, and samples of the instruments used. This report was written for school administrators and therefore included information of particular interest to them. (4)

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CHAPTER 6.
SUMMARY: QUESTIONS AND STEPS IN INITIATING A PROGRAM

QUESTIONS IN INITIATING A PROGRAM

When program developers begin to initiate a new program, they should be prepared to address several questions and issues. In discussing some of the more critical questions which follow sample responses are provided where appropriate. Each situation is unique, however, and program developers should form their own responses to the questions to fit their particular grades, community, and school system. Some of the issues embedded in these questions have been discussed earlier; they are highlighted again because of their importance.

General Questions

The following are general questions that may be raised by parents, other members of the community, teachers, or administrators about the overall reason for a special program and its effect on the community, school, and students.

1. *Why is a special program for gifted and talented necessary?*

Many students in our country are not receiving instruction commensurate with their abilities, interests, and characteristics. While some attention has been focused on handicapped and learning disabled individuals and much has been done for the average learner through teacher training and textbook publishing, the gifted and talented students have received very little program recognition and support. Usually these students spend most of their time in school in frustration—receiving information, instruction, and materials far below their potential and inappropriate for their characteristics. In most classroom situations they are presented with concepts and skills they have already mastered; consequently, much of their academic experience is repetitious, unnecessary, and unsatisfying. They need special attention and provision just as any other learners whose characteristics and abilities differ from those for whom most instruction is designed.

2. *Won't these students become an elitist group if they are singled out?*

This is a complex question which raises the issues of elitism, emotional problems, and social implications discussed previously. However, it is one which is usually asked in one form or another in every program for gifted and talented. The direct answer is, "In general, no, they won't." Research has been conducted in this area and the findings indicate that in most situations gifted and talented individuals in special programs do not consider themselves an elite group, nor do they have severe emotional problems. Gifted individuals in special programs realize they have exceptional abilities but are usually able to put them into realistic perspective.

Special programs for gifted and talented do not create emotional problems. Indeed, these problems may actually be avoided or alleviated by instituting a special program for the gifted since more emotional difficulties tend to arise from frustrating situations. Ruth Martinson reports research indicating that gifted and talented in special programs relate better to other individuals than gifted and talented not in these situations. (1)

3. *How does the establishment of a program for gifted and talented relate to the school's philosophy?*

Most school systems have the ultimate goal of educating each student to fulfill the individual's potential. In addition, many also believe that instruction should be based as much on an individual's own needs and abilities as on the course content. The establishment of a program for the gifted and talented actually helps fulfill this obligation because it provides a specific group of learners who have special characteristics, needs, and abilities the opportunity to fulfill their potential in a learning situation designed to meet their needs.

4. *What are the goals of the program for gifted and talented?*

The answer to this question will vary with each situation, depending on area of giftedness, curriculum, community, and philosophy. In general, most programs for gifted and talented have cited as goals the development of some of the following abilities:

- Leadership qualities such as self-awareness, social awareness, responsibility, and independence

- Advanced communication skills in a variety of areas
- Higher level thinking skills (e.g., analysis, synthesis, and evaluation)
- Creative and productive thinking skills
- Problem-finding and problem-solving skills
- Independent research skills.

Although most of these goals also apply to other programs, they are often primary with the gifted and talented while acquisition of skills and content usually takes precedence in regular classes. (See question 12.)

5. *What is the school doing now to provide for the gifted?*

This question also has several issues embedded in it, such as current program and individualizing instruction within the classroom. At the middle and high school levels some schools have instituted honors and advanced placement programs. Many consider these classes as programs for the gifted and talented. In most situations, however, such classes do not provide for gifted individuals because they are not often based on their characteristics, needs, and abilities. Rather, they may have the students work in the same manner as in other classes, stressing knowledge and recall of information, albeit with more advanced materials at a faster rate. Although they are good programs for the bright student they are usually inappropriate for the gifted and talented individual. In any case, the program developer should be aware of these classes, the materials used, and the type of instruction before claiming the need to establish a new program.

At the elementary school level, many view "individual instruction" as the way in which the needs of the gifted and talented have been met in the school. Ideally this technique should provide the appropriate instruction for all students, including the gifted. However, it seldom does. As Ruth Martinson observes:

> Even though individualized instruction accommodates the gifted and talented to a greater degree than the traditional classroom operation, it cannot replace separate programs which expose the students to learnings that exist beyond the confines of even the best individually instructed classroom. (1)

Furthermore, few classroom teachers have been trained to identify and work with the gifted. Often they provide for these students by allowing them to do more of the same or by having them work with less able classmates. While the latter method may facilitate some of the individualization within the classroom, it does not help the gifted and talented individuals work to their abilities and develop their skills.

Finally, many school administrators state they do not have programs for the gifted and talented. They frequently overlook varsity sports, however. These sports programs fulfill many of the criteria for gifted programs, having established a careful screening procedure, a special, high-level curriculum, and high expectations of the entrants. Some developers have used the example of varsity sports to illustrate the existence of special programs for gifted and talented in school systems in which administrators stated they were philosophically opposed to programs for the gifted.

6. *How will the program affect the rest of the school?*

All administrators and teachers raise this question either publicly or privately. In general, a program for gifted and talented has a positive effect on the total school system. By providing for these students, the school alleviates their frustration and discontent and, since these are often the real student leaders, creates a positive atmosphere throughout the student body. The curricular changes in classes for gifted and talented often affect the curriculum in other classes as new resources are brought into the school, products and projects are shared, and different techniques are tried.

These benefits, however, will occur only if opportunities for interaction and involvement among faculty exist. Otherwise, there may be some resentment of the special program and a negative atmosphere may result. This interaction should be encouraged by early involvement and awareness of all teachers and staff and by continual sharing of ideas and resources throughout the school. The key is articulation among teachers and staff.

Other effects on the school will depend on the specific program design. If the design calls for a school within a school as in Brockton, Massachusetts, the overall organization of that school will be affected. On the other hand, a mentor program conducted outside the school may have little effect on other classes. If students are removed from classes on a permanent basis, the daily classroom routine will not be altered so much as it would be in a program where students are removed from some classes for part of the time. These effects have to be considered because ultimately the attitudes of individual teachers who may have to cope with them will greatly influence the overall program success.

7. *How are some other school systems providing for their gifted and talented students?*

This may be one of the most important questions since ultimately the school system is responsible to the community which it serves and must respond to its reactions. Therefore, it is vital for program developers to consider the community and the means to ensure a generally positive reaction to the program. One way to help this effort is to involve members of the community throughout the process. Members may represent parent groups as well as local organizations which might become involved later in the program (e.g., community theater, local business). Teachers in the program should be encouraged to continue this involvement and community awareness after the program has been established.

Another group of parents is equally vital to the establishment and success of the program: those whose children are not involved in the program for the gifted and talented. Members of this group can become very vocal in their opposition to the program if they believe it is affecting their children adversely. Since they, by definition, constitute the majority, their concern must be addressed before the opposition becomes too strong. Several of their potential concerns have been considered previously, but one major question remains: How does the school cope with parents who feel their children should be in the program but are not? *First,* the criteria for selection must be carefully defined. This does not mean only tests should be used, but rather that program developers should know the relationship between the criteria, the characteristics, and the curriculum. As Ruth Martinson observes:

> A program tailored to the gifted and talented but applied to the average causes frustration and failure for the average; conversely, a program designed for the average and made available for the gifted and talented restricts self-fulfillment for the gifted and talented and can also cause frustration and failure for the gifted. (1)

Second, the school must decide how pressure for admission will be handled. Will some students who have influential parents be admitted while others are kept out? Or will any children be allowed into the program on a trial basis? If the latter, the criteria for continuing in or dropping out of the program should be made clear. These factors do not have to be clarified immediately, but they should be addressed for later development.

8. *How do others feel about establishing a program for the gifted and talented in their school system?*

Before making a proposal for the development of a program for gifted and talented, various attitudes toward such a program should be explored. By discussing the need for the program with individuals from groups such as the school board, teachers' association, parents' organization, student government, and influential administrators on an informal basis, program developers can often foresee potential conflicts and enlist valuable support. This information helps the administration decide whether or not to begin work on developing the program.

Implementation

The following questions address specific aspects of implementing the program in the school; they often arise during an initial discussion with a chief administrator or a school board.

9. *How many students will be involved?*

The response to this question, of course, depends on several factors, such as type of program, characteristics of population within the community, size of student body, and number of grade levels involved. The most legitimate approach would be to work from the criteria for selection within a specific area and accept all students who meet these criteria. Then, the program would have to be developed around that number. If it is to be at a single grade level for a full-time teacher, the program might involve combining grade levels or hiring a part-time teacher.

The foregoing approach is the most valid way of determining numbers, but many times people want an estimate of potential figures before the criteria have been established. Depending on the type of program and the characteristics of the community, a gifted and talented program may involve up to 10 percent of the potential population. For example, if a school plans to institute a program encompassing grades three and four in a nongraded situation and has 150 students at each grade for a total of 300 potential candidates, approximately 15 students will be involved if they assume 5 percent of this population is gifted and talented.

Some schools work from the other direction. They assume a program needs a minimal number of students for implementation and then base final numbers on that figure. For example, if the program involves a full-time teacher and the system needs 20 students to warrant the teacher, then at least 20 gifted students will have to be identified. While this method may be practical logistically, it may be unrealistic in terms of the individuals who actually meet the criteria for the program.

10. *How will the program be staffed?*

Again, the response to this question depends on the type of program envisioned. Program developers should, however, be aware of some of the staffing options which will help meet the goals of the program. These may range from full-time faculty in a separate school to resource people from the community in a mentor program. In each case selection and training should be considered. The selection should be in accordance with local teacher association and administrative policy; it should, in addition, focus on interest in working with gifted and talented, expertise in the field, training in education of the gifted and talented, as well as other teacher characteristics mentioned in chapter 4.

In-service training is also a necessary component. Consequently, program developers should be aware of the areas of training needed and the means of accomplishing it. Some training may be conducted in general through a local college or university which offers courses in educating the gifted and talented or through leadership workshops conducted by various organizations. Sometimes specific training is provided by a consultant in gifted and talented who will gear the training to a specific program and may, on a long-term arrangement, work with teachers in their classes as well as with administrative designs, curriculum, and evaluation. Where neither courses nor consultation is available, self-help tests might provide some basic training for teachers. (See Selected References—*Star Power,* and Treffinger and Curl.) In-service work might well encompass the entire faculty since an effective program will require cooperation and support throughout the school.

11. *How will students be selected for the program?*

Although some educators have designed general identification procedures for gifted and talented, each program should have an identification procedure which reflects the characteristics of the potential population, the goals of the program, and the curriculum within that program. After these elements are considered, the program developers may find other identification procedures to be appropriate, but they should not be adopted unless they fit the particular situation.

With that caution, program developers can respond to this question once the general type of program has been determined. *Characteristics and Identification of Gifted and Talented Students* lists general approaches for selecting students for programs within each category: intellectual, academic, visual and performing arts, creative and productive thinking. Program developers should know the kinds of instruments and procedures they plan to use because these factors will affect the cost and the amount of staff involvement, as well as the time for the selection process.

12. *What should be taught?*

Ultimately someone must ask about the content of a special program for gifted and talented and how it will differ from other classes. Many educators suggest that any program for the gifted must be qualitatively different from the regular program in school. Although there are several different definitions of "qualitative difference," in general this difference will be reflected in content, instruction, and student product. The difference in most situations is one of level and quality rather than quantity. Instead of having students in the program do more with the same materials, these students should be using materials and methods which are appropriate to their level. Instruction in academic programs, for example, should stress higher levels of cognition (see chapter 3), such as analysis and synthesis, more than lower levels, such as recall of information.

The difference is not that the pupils in the special program work at higher levels only and those in regular classes are confined to work at lower levels. All students should receive instruction at all levels, but in programs for the gifted a greater percentage of instruction should be at higher levels.

Finally, the difference between programs should be reflected in the quality of work the learners produce. While students in programs for gifted and talented should receive instruction in and have experiences with a wide variety of appropriate skills, such as problem finding and problem solving, ultimately they should produce works that reflect their superior abilities in a particular area.

In addition to qualitative difference between programs, parents, teachers, and administrators are also concerned with acquisition of "basic" skills in these special programs. Program developers should ensure that students will possess all the skills basic to the various areas of the curriculum as they proceed through the program.

> One individual responded to this question in the following manner: In the special classes for the gifted and talented our program will have a high percentage of instruction at higher levels of cognition emphasis on creative and productive thinking skills, and work with problem-solving and problem-finding skills. Although these areas are often stressed in regular classes, in the special classes teachers will spend a greater amount of time and effort on these areas. In addition, the acquisition of "basic" skills will be ensured but not stressed so heavily as in other classes. Finally, a great deal of emphasis will be placed on high quality of student product and depth of research involved in the production. We would not hold these expectations of students in the regular curriculum.

13. *What support services will be needed to implement the program?*

Most programs will require periodic input from a variety of services throughout the school system. When a program is under consideration, these services have to be taken into account as they will affect other areas such as cost, other programs, and community. In programs for the gifted and talented, for example, school psychologists might help with the identification and counseling, bus drivers might be needed for additional transportation, or parents might be asked to serve as mentors.

In addition to these areas which are usually viewed as support services, program developers should also examine the need for input from teachers outside the special program. Some of these might be content area teachers who serve as mentors or who help identify students for the program. Others might involve art and music teachers helping students with special projects. While this involvement may be extremely valuable, it should be foreseen early since it will require extra time and effort from these individuals.

14. *How much will the program cost?*

The answers to the previous questions will affect the cost of implementing the program, and ultimately the establishment of the program may depend on the estimated cost. If the program developers have an estimate of the cost or at least the variables that will have to be considered, realistic decisions can be made early to provide for the most productive work. In general, the following factors are often considered: teacher salary, transportation, in-service release time, consultation, identification materials, instructional materials, and room rental. Depending on the design, many of these expenses may be absorbed within the regular budget by reorganizing resources already in the system. For example, if the design is for a self-contained, homogeneous class of twenty-five students, the cost of the teacher would not be additional as the school would need a teacher for those students with or without the special program. If parent volunteers will provide transportation, this charge may be reduced. Cost should not be viewed unrealistically, however, because the saving of some money may jeopardize the effectiveness of the program. For example, some schools have attempted to save money by not providing in-service training and awareness for the faculty. While money was saved initially, the programs were endangered because of lack of awareness throughout the school system with consequent arousal of suspicions.

15. *What about continuity through the system?*

Even though most new programs are initiated at a single grade level, program developers should also plan for future expansion. Programs for gifted and talented which are discontinuous, abandoning students before the end of their schooling, are incomplete. One student in a program that terminated at ninth grade commented, "Now I don't have to do much work until twelfth grade. I've already done what they do in tenth and eleventh grades." Establishing a program for the gifted should indicate the recognition of the need to provide special experiences for these students at all grade levels, developing their skills and abilities in a coordinated, sequential manner.

> A parent at a parent-support group meeting was concerned with future development. His oldest child is eight and in third grade. He suggested rather than third grade parents working for third grade programs to be initiated a year too late, perhaps they should be looking at high school programs to pave the way for the future.

16. *How will the effectiveness of the program be evaluated?*

Responding initially to the method of evaluation, program developers might explain when the evaluation could take place, which elements would be considered, and who should conduct the evaluation. As indicated in chapter 5, program evaluation should be an ongoing process as well as a final assessment. This continuing aspect should be initiated early in order that the entire program development may be examined. When designing a method to evaluate a program, all components, including goals, selection process, curriculum, and evaluation, should be taken into account. Finally, the evaluator, whether a consultant or a committee, should be designated early to provide for total involvement in the program development process from the beginning.

17. *Who will have responsibility for the program?*

The question of responsibility is sometimes unresolved until it is assumed by neglect. No one else takes it; consequently, the teacher is left with the total responsibility of the program which places the teacher in the awkward position of implementer, evaluator, and public relations representative. Without a formal assignment of responsibility for various functions, misinformation may be conveyed and a frustrating situation may arise. Often the duties are divided among various individuals with the teacher responsible for classroom activities and student evaluation, the building principal taking care of public relations, the curriculum coordinator in charge of general curriculum development and continuity, and an outside consultant assuming the responsibility for in-service training and program evaluation.

STEPS IN INITIATING A PROGRAM

The following fifteen steps for developing a program for the gifted parallel the preceding questions. Both encompass suggestions by several educators in this field, especially William Vassar, Consultant for Gifted and Talented in Connecticut. Although the word "steps" implies a sequential progression, developers should not proceed in a linear fashion. Rather, they should consider several "steps" simultaneously, moving back and forth among them as ideas are clarified, and often jumping ahead to gain insights necessary for "earlier" steps.

1. *Establishing the need.* Why does this particular school or community need a special program for gifted and talented? Can't these students do well enough on their own? Hasn't the school already provided for them with honors and advanced placement programs?

2. *Stating goals and objectives.* What do we hope the students will gain from participating in this program? How will they demonstrate their growth?

3. *Delineating the population.* What area(s) of gifted and talented will be considered for the program? What are the characteristics of individuals to be included? How many students and what grade levels might the program involve?

4. *Establishing selective criteria.* What instruments and procedures are available to help locate individuals with these special characteristics? What will be the criteria for admission? Will the approach be inclusive or exclusive? How much will the selection procedure cost? How long will it take? What staff will be involved? Will staff require in-service training?

5. *Describing staffing needs.* How many teachers will be needed for instruction? What qualifications will be required? Will teachers need auxiliary support from aides, counselors, and/or parents?

6. *Describing physical facilities.* How many rooms will be involved? When will these rooms be used? Does the program call for special instructional or laboratory materials? Will extra transportation be required?

7. *Describing in-service training.* What special training should be received by staff directly involved in the program? Will in-service workshops be necessary for teachers and administrators outside the program? Who should provide this training? Will there be programs for parents and community? When should in-service training sessions occur?

8. *Detailing administrative design.* What will the overall structure of the program involve? How does this design facilitate the achievement of the goals? How much will it cost beyond the regular program?

9. *Developing curriculum.* What are the specific objectives of instruction? What model(s) will provide a theoretical basis for instruction? How will the curriculum for the gifted and talented differ from that in the regular program? How will the "basic curriculum" be acquired by students in the special program? Who will develop the curriculum? Will they need extra help?

10. *Listing community resources.* How does the program involve the community? What resources, including people, places, and activities, are available to benefit the program? What resources are available inside the school, including staff, places, and extracurricular activities?

11. *Exploring sources of funding.* What financial support is available within the established budget? Can some money be saved by reallocating resources? What external financial or resource support is available, including grants and donations of material and/or space? Can the students raise money for special projects?

12. *Describing the program evaluation procedure.* How will evaluation be conducted? Will it be both formative and summative? What kind of information will be of interest to whom? Who will receive the evaluation? Who will conduct the evaluation? When will the program evaluator become involved in the program?

13. *Delineating roles.* Who will be responsible for various aspects of the program? Who will have overall control and responsibility?

14. *Describing necessary consultation.* What outside expertise will be helpful? Who will need this help? When should it be made available? How much will it cost?

15. *Delineating the articulation procedure.* How and when will information about the program be shared among the teachers? How much opportunity will teachers in the program have to interact with teachers outside the program? How and when will administrators share information and ideas about the program with faculty? How and when will the school share information about the program with the community? Who will assume responsibility to ensure articulation?

Recommended Phases of Program Development

Perrone, Morris-Jones, and Post of the University of Wisconsin at Madison have listed tasks that should occur within a given time line to institute a program for gifted and talented.

Phase I

- Identify a coordinator.
- Appoint a Parent Advisory Committee and a Professional Steering Committee.
- Develop philosophy, goals, and objectives.
- Design program with differentiated content, techniques, materials, and learning environments consistent with philosophy, goals, and objectives.
- Begin workshops and in-service meetings with administrators, teachers, and other school personnel.

- Identify teachers of gifted and talented.
- Design assessment schedule and identify procedures to be used.
- Begin regular staff meetings.
- Orient parents and students to program goals and student needs.
- Collect and develop relevant curriculum materials.
- Plan pre- and post-evaluative materials for program.

Phase II

- Organize Community Resource Catalogue (persons, organizations, places, and experiences).
- Designate resource centers and a resource person at each school.
- Develop case conference materials and procedures so students can: 1) be identified and 2) be programmed according to their educational needs.
- Continue regular public dissemination of information.
- Meet with teachers at each school to discuss who and why identification of each child.
- Meet regularly with parents of the gifted and talented students.
- Continue screening new arrivals in the district.
- Curriculum personnel and teachers of gifted and talented classes prepare a written curriculum. (2)

References

1. Martinson, Ruth A. "Research on the Gifted and Talented: Its Implications for Education." In *Education of the Gifted and Talented: Report to the Congress of the United States by the U.S. Commissioner of Education*. Washington, D.C.: Government Printing Office, 1972.
2. Perrone, Philip A.; Morris-Jones, Dana; and Post, Phyllis. "Procedures in Programming for Talented Students." Madison: Guidance Institute for Talented Students, University of Wisconsin-Madison, n.d.

SUPPLEMENTARY MATERIALS

GLOSSARY OF ADMINISTRATIVE DESIGNS

ACCELERATION. Selected students are allowed to advance more quickly than chronological peers. This may be accomplished in several ways: early admission, grade skipping, compressing curricula. This approach has been especially successful in areas such as mathematics where the learning is sequential and hierarchical in nature.

ADVANCED PLACEMENT. Students in high school take courses which allow them to bypass some courses in college. In some situations students may take college courses in high school and receive college credit for them.

CLUSTER-GROUPING. Teachers from different disciplines have classes with the same groups of selected students. Often they have responsibility for designing schedules as well as curriculum. This design is usually found at the middle or junior high school level.

EXTRACURRICULAR CLUBS. Students with particular interests form a club with a faculty sponsor and explore areas within that field after school.

INDEPENDENT STUDY. Selected students are allowed to pursue an area of interest apart from the rest of their class. Often this results in an extensive project based on a contractual agreement between teacher and student.

INDIVIDUALIZED INSTRUCTION. Each student has an individually designed course of study to meet particular needs, abilities, and characteristics. Special materials such as kits and self-correcting programs are often used to facilitate the instruction.

ITINERANT TEACHER. A trained teacher conducts classes for gifted and talented students at different schools. Usually there are pull-out, supplemental classes in which the students are periodically excused from regular classes to work with this teacher.

MAGNET SCHOOLS. Some larger systems have provided for gifted and talented by transporting them to a separate school where the entire curriculum is designed for their characteristics and areas of superior ability.

MENTORS. Students are paired with members of the community who have expertise in the area of interest of the selected students. Usually they meet with each other after school or on weekends, with the work being supplementary to the regular curriculum.

RESOURCE CENTER. An area is set aside with a teacher trained to work with gifted and talented students. The students may meet with the teacher informally during the day or at specific times during the week to supplement their other classes. Sometimes selected students from other schools in the district are transported to this center for special, supplemental classes.

SATURDAY AND SUMMER EXPERIENCES. Some gifted and talented students expand their abilities by enrolling in special summer or Saturday programs. These may be run by the school system, by an outside organization, such as a college, individual or private concern, or by a nonprofit organization.

SCHOOLS WITHIN SCHOOLS. When the population does not warrant an entire building and faculty to accommodate the gifted and talented, school systems sometimes set aside part of a school for these students. Although the gifted may have their academic experience as a homogeneous group, they may have other classes with the rest of the school.

SELF-CONTAINED, HOMOGENEOUS CLASS. Students are placed with other students showing similar characteristics for their academic experiences. The class may be at one grade level or may combine grades. One teacher is responsible for the class. This arrangement works especially well at the elementary level.

TEAM-TEACHING. An adaptation of cluster-grouping, this design enables two teachers to cooperate in scheduling and planning by giving them the same selected students for part of the day. They often try to integrate their subjects into an interdisciplinary program, such as humanistic.

ROLES OF INVOLVED PERSONNEL*

Coordinator	Teacher	Student	Principal	Parent
• Design, develop, coordinate, & evaluate the program. • Develop & implement curriculum (techniques, materials) related to enriching the total program. • Prepare financial, statistical, & descriptive reports as needed to develop, maintain, & account for the program. • Coordinate identification & certification procedures. • Serve as consultant & resource to the staff, students, & parents involved with the program. • Participate as part of the Educational Services staff. • Promote public relations activities at the local, county, & state levels.	• Provide an enriched individualized program for the gifted. • Assist students in planning, organizing, & evaluating tasks. • Screen, develop, & provide appropriate materials for the gifted. • Evaluate pupil progress. • Interpret the program to parents. • Provide an enriched extension of the regular curriculum for gifted students in intra- or extra-classroom settings. • Demonstrate diverse methods of instruction appropriate for the gifted, such as problem solving, independent study, etc.	• Attend regular or specially scheduled programs or events. • Complete selected tasks. • Communicate & share learning experiences with peers, teachers, & parents. • Practice decision-making skills. • Develop self-awareness & understanding. • Participate in planning & evaluating learning experiences within the program.	• Become knowledgeable about the unique needs of the gifted. • Become acquainted with gifted students in the school. • Stimulate interest in & concern for the gifted. • Urge teachers to provide qualitatively-differentiated programs for the gifted in their classrooms. • Encourage & assist teachers in securing appropriate instructional materials for the gifted. • Work cooperatively with other personnel in objectively evaluating the program.	• Provide support & stimulation at home. • Become mentor for gifted children. • Enlist the support of community members who can serve as resource persons for the gifted, & provide unique learning experiences for gifted pupils. • Become member of a Parent Advisory Council or other decision-making group.

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* From "Identification of Talented Students" by Philip A. Perrone et al., Guidance Institute for Talented Students, University of Wisconsin-Madison, n.d.

DIFFERENTIATING CURRICULUM FOR THE GIFTED AND TALENTED*

Curriculum for the gifted and talented can only be marked as such if it encompasses elements which distinguish it from being suitable for the education of *all* children. Curriculum for gifted students must be congruent with the characteristics that identify them as a distinct population. The answer to the question of why a student is gifted or talented is also the answer to the question of what type of curricular provisions should be developed for this child.

Differentiation of curricular activities for the gifted and talented relies on the elaboration of certain variables: procedures for presenting learning opportunities, nature of the input, and expectancies for learning outcomes.

DIFFERENTIATING LEARNING WITHIN THE REGULAR CURRICULUM		
Procedures for Presenting Learning Opportunities	Exposure	—Students are exposed to experiences, materials, and information which are outside the bounds of the regular curriculum, do not match age/grade expectancies, and introduce something new or unusual.
	Extension	—Students are afforded opportunities to elaborate on the regular curriculum through additional allocation of working time, materials, and experiences, and/or further self-initiated or related study.
	Development	—Students are provided with instruction which focuses on thorough or new explanation of a concept or a skill which is part of a general learning activity within the regular curriculum.

DIFFERENTIATING LEARNING AS A SEPARATE CURRICULUM	
Type of Input	Accelerated or advanced content Higher degree of complexity of content Introduction of content beyond the prescribed curriculum Student-selected content according to interest Working with the abstract concepts in a content area Level of resources used Type of resources available
Expectancies for Learning	Appropriating a longer time for learning Creating or generating something new (information, ideas, product) Depth of learning Transfer and application of learning to other and/or new areas of greater challenge Evidence of personal growth or sophistication in attitudes, appreciations, feelings Formulating new generalizations Development of higher level cognitive processes Stylizing and implementing own study design

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* From *Providing Programs for the Gifted and Talented: A Handbook* by Sandra N. Kaplan, pp. 123-26 (Ventura, Calif.: N/S-LTI-G/T, 1974).

DIFFERENTIATING CURRICULAR ACTIVITIES FOR THE GIFTED AND TALENTED

Means of Differentiating	Explanation	Illustration
1. Accelerated or advanced content	Working with knowledge and skills which correlate with the student's mental rather than chronological age, parallel his interests, and satisfy his need and quest for substantive information	Student ready for algebra at nine-year-old level is given a tutor.
2. Higher degree of complexity of content	Allowing student performance to dictate speed/direction of learning Learning experiences which require higher order thinking processes, such as analyzing, creating, and evaluating Learning experiences that require assimilation of principles, theories, and concepts associated with knowledge held by "the professional or expert"	The gifted student is pursuing the topic of Occults as an outgrowth of learning the expected topic of Mythology.
3. Introduction of content beyond the prescribed curriculum	Learning what is traditionally reserved for another grade or age level Learning what is related to other areas or crosses the boundaries of the disciplines	Gifted student is studying the cause-and-effect relationships of various forms of paternalism in people's voting pattern in different countries as an independent study within a United States history class.
4. Student-selected content according to interest	Allowing student need and interest to govern what is to be learned and/or to dictate what areas within a body of knowledge that will be studied	The gifted student interested in violin is independently pursuing the topic in a general music class by leaving his regular class in the elementary school to attend class at the high school.
5. Working with the abstract concepts in a content area	Dealing with those ideas, theories, and concepts which are inferred or discrete and which require reflective, critical, and creative thinking in order to make them concrete or give them meaning	The gifted student illustrates the ways a proverb is "lived" by a literary character.

DIFFERENTIATING CURRICULAR ACTIVITIES FOR THE GIFTED AND TALENTED

(Continued)

Means of Differentiating	Explanation	Illustration
6. Level of resources	Allowing students to use resources beyond those reserved or designated for regular curriculum input	Gifted elementary student calls a college professor to obtain information regarding his questions in a particular subject.
7. Type of resources available	Insisting on acquiring information from multiple and varied resources which includes other informational sources besides books	The gifted student was given the yellow page telephone directory to find out who could be contacted to assist him in obtaining information regarding his study.
8. Appropriating a longer time for learning	Acknowledging that the student with multi-interests and abilities needs appropriate time to learn by defining his work schedule; recognizing that the student sometimes needs to pursue a topic or skill more extensively or to a greater degree of proficiency	The gifted student contracts with the teacher as a means of setting time limits on studying a topic. The gifted student is given additional time to experiment with properties in chemistry in order to discover or prove something in which he is interested in a more complex manner than is assigned to the other students in the class.
9. Creating or generating something new	Expressing additional examples, new and original alternatives and relationships, and possible solutions in either verbal or illustrative form to given issues, problems, and ideas	The gifted student, as a result of a study of current political issues, is developing a new method to raises campaign funds for political office which is to be submitted to a Congressman for reaction.
10. Depth of learning providing alternative and related experience with recognition that the student requires fewer stages and less time to learn a concept	Gathering information to a level of understanding which satisfies the attainment of a skill or idea, the quest for learning exhibited by the student and the objectives of the instructor	The gifted student is engaged in collecting and processing data which could clarify the meaning of loneliness as it applies to ethnic groups within American society.
11. Transfer and application of learning to other and/or new areas of greater challenge	Applying what is learned to substantiate, negate, extend, or verify learnings in another area of the curriculum or another body of knowledge	The gifted student in a math study is utilizing the process of multiplication to develop statistical predictions of how the country's food supply will accommodate the population explosion.

DIFFERENTIATING CURRICULAR ACTIVITIES FOR THE GIFTED AND TALENTED

(Continued)

Means of Differentiating	Explanation	Illustration
12. Evidence of personal growth or sophistication in attitude, appreciations, feelings	Cultivating and rewarding honest opinions and reactions, divergent responses, and questioning attitudes; incorporating learning about humaneness as a concomitant to learning a body of knowledge of a specific skill; learning how to assess and obtain feedback about "in" personal and academic endeavors	The gifted student is making a profile of famous men who were scholars in order to identify the traits he has in common with them.
13. Formulating new generalizations	Summarizing and developing new theories and ideas for what has been learned and which may be used at some other time.	The gifted student has summarized all the data relative to World War I and II to formulate a new theory about a society's need for dominance.
14. Development of higher-level cognitive processes	Learning and practicing the skills related to the processes of analyzing, synthesizing, and evaluating as both separate processes and as processes which are part of the strategies of problem solving, critical thinking, and creativity	The gifted student has evaluated the need for learning about geology and presented his argument to the Board of Education.
15. Stylizing and implementing a student study design	Recognizing and utilizing the skills of research and scientific exploration effectively in a given learning endeavor and finding out what style of learning is successful for the student	The gifted student has organized an outline for developing a position paper on some aspect of the use of atoms.

LIST OF TEACHER PREPARATION PROGRAMS IN GIFTED AND TALENTED

Masters and Ph.D. Programs in Gifted Education
or
with Emphasis in Gifted Education*

ALABAMA

Masters Program with State Certification:
University of Alabama at Birmingham
Dr. Gayle Gear
Department of Special Education
University College
Birmingham, Alabama 35294
(205) 934–3440

University of Alabama at Tuscaloosa
Dr. Carol Schlicter
Department of Special Education
Box 2592
Tuscaloosa, Alabama 35486
(205) 348–7340

Masters Program with State Certification, Bachelors Degree Program, and Sixth Year Diploma:
University of South Alabama at Mobile
Dr. Marvin Gold
Department of Special Education
Mobile, Alabama 36688
(205) 460–6460

ARIZONA

Masters Program:
Arizona State University
Dr. Willard Abraham
Department of Special Education
Tempe, Arizona 85281
(602) 965–6156

University of Arizona
Dr. George Leshin
Department of Special Education
Tucson, Arizona 85721
(602) 884–3214

CALIFORNIA

Masters Program with State Certification:
California State University at Long Beach
Dr. Alexander Britton
Department of Educational Psychology
Special Education Area
Long Beach, California 90840
(213) 498–4526

Masters and Ph.D. Program with State Certification:
California State University at Los Angeles
(Joint Doctorate with UCLA)
Dr. Barbara Clark
Department of Special Education
Los Angeles, California 90032
(213) 244-3525 or 244-3711

Masters Program with State Certification:
University of Santa Clara
Dr. Joyce A. Gerard
Department of Education
Santa Clara, California 95053
(408) 984–4434

COLORADO

Masters, Ph.D., and Sixth Year Diploma Program:
University of Denver
Dr. Kenneth R. Seeley
Special Education, School of Education
Denver, Colorado 80208
(303) 753–3203

CONNECTICUT

Masters, Ph.D., and Sixth Year Diploma Program:
University of Connecticut
Dr. Joseph S. Renzulli
Department of Special Education
Storrs, Connecticut 06268
(203) 486–4531

FLORIDA

Masters, Educational Specialist, and Ph.D. Program:
University of South Florida
Dr. Dorothy Sisk
Department of Special Education
Tampa, Florida 33620
(813) 974–2100, Ext. 241

GEORGIA

Course Work leading to Certification:
Augusta College
Dr. Geraldine W. Hargrove
School of Education
Augusta, Georgia 30904

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* Reprinted from the August 1979 National/State Leadership Training Institute on the Gifted and the Talented *Bulletin*.

Georgia Southern College
Dean, School of Education
Statesboro, Georgia 30458

Summer Program leading to Certification:
Georgia College
Dr. John H. Lounsbury
School of Education
Milledgeville, Georgia 31061
(912) 453–4546

Masters, Ph.D., and Sixth Year Diploma
Programs with State Certification:
University of Georgia
Dr. Mary Frasier
Department of Educational Psychology
College of Education
Athens, Georgia 30602
(404) 542–4110

ILLINOIS

Masters Program:
Northeastern Illinois University
Dr. Steve Lapan
Department of Special Education
5500 North S. Louis
Chicago, Illinois 60625
(312) 583–4050, Ext. 8280

INDIANA

Masters and Ph.D. Program:
Indiana State University
Dr. Liam K. Grimley
Department of Special Education
Terre Haute, Indiana 47809
(812) 232–6311

Purdue University
Dr. John F. Feldhusen
Educational Psychology Section, SCC-G
West Lafayette, Indiana 47906
(317) 749–2844

IOWA

Masters Programs:
Iowa State University
Dr. Joan Breiter
Department of Elementary Education
Ames, Iowa 50021
(515) 294–7010

University of Northern Iowa
Dr. James O. Schnur
College of Education
Cedar Falls, Iowa 50613
(319) 273–2167 or 273–2719

KANSAS

Masters Program with State Certification
or Research Emphasis; Ph.D. Program:
University of Kansas
Educational Psychology and Research Department
6 Bailey Hall
Lawrence, Kansas 66045
(913) 864–4256

MARYLAND

Masters and Ed.D. Program:
The Johns Hopkins Evening College and Summer Session
Dr. Lynn Fox
Intellectually Gifted Child Study Group
Baltimore, Maryland 21218
(301) 338–8276

Ph.D. Program:
The Johns Hopkins University
Dr. Julian C. Stanley
Study of Mathematically Precocious Youth
Department of Psychology
Baltimore, Maryland 21218
(301) 338–7087, 338–8144, 338–7086

MASSACHUSETTS

Masters Program with State Certification:
Boston College
Dr. Katherine Cotter
School of Education
Campion 309
Chestnut Hill, Massachusetts 02167
(617) 969–0100, Ext. 4223

MICHIGAN

Masters and Educational Specialist Program:
University of Michigan
Dr. Eleanor G. Hall
School of Education
Ann Arbor, Michigan 48104

Wayne State University
Dr. Thomas M. Buescher
Department of Special Education
Detroit, Michigan 48202
(313) 577–0927

MISSISSIPPI

Masters, Specialist, and Ph.D. Program with
State Certification:
University of Southern Mississippi
Dr. Frances A. Karnes
Department of Special Education
Southern Station, Box 5115
Hattiesburg, Mississippi 39401
(601) 266–7156

MONTANA
Bachelor and Masters Program:
Eastern Montana College
Dr. C. Rockne Copple
Institute for Habilitative Services
Billings, Montana 59101
(406) 657–2351

NEW JERSEY
Masters Program:
Kean College of New Jersey
Dr. Phyllis F. Kavett
Department of Educational Arts and Systems
Union, New Jersey 07083
(201) 527–2356 or 527–2175

NEW YORK
Masters and Ph.D. Program:
Teachers College, Columbia University
Dr. Abraham Tannenbaum
Department of Special Education
New York, New York 10027
(212) 678–3865

NORTH CAROLINA
Masters Program with State Certification:
Appalachian State University
Dr. Richard Stahl
School of Education
Boone, North Carolina 28608
(704) 262–2182

University of North Carolina at Charlotte
Dr. Eugene Schaffer
College of Human Development and Learning
Charlotte, North Carolina 28223
(704) 597–2171

Western Carolina University
Dr. Roy Cox
School of Education and Psychology
Cullowhee, North Carolina 28723
(704) 227–7249

OHIO
Masters and Ph.D. Program:
The Ohio State University
Dr. Raymond H. Swassing
College of Education
Columbus, Ohio 43210
(614) 422–8787

Masters, Educational Specialist, and Ph.D. Program (also Bachelor Program with dual major: Gifted and Elementary Education):
Kent State University
Dr. Wilber Simmons
401 White Hall
Kent, Ohio 44242
(216) 672–2477

OREGON
Masters Program:
University of Oregon
Dr. Fay Haisley
College of Education
Eugene, Oregon 97403
(503) 686–4591

PENNSYLVANIA
Masters Program:
Beaver College
Dr. Steven P. Gulkus
Education Department
Glenside, Pennsylvania 19038
(215) 844–3500

Pennsylvania State University
Dr. Joseph French
Department of Educational Psychology
University Park, Pennsylvania 16802
(814) 865–1881

Shippensburg State College
Dr. James Payne
Graduate Studies
Shippensburg, Pennsylvania 17257
(717) 532–9121

Masters and Ph.D. Program:
University of Pennsylvania
Dr. Albert I. Oliver, Jr.
Graduate School of Education
3700 Walnut Street, C1
Philadelphia, Pennsylvania 19014
(215) 243–7389

TENNESSEE
Masters Program:
University of Chattanooga
Dr. Caryl Taylor
Department of Special Education
Chattanooga, Tennessee 37404
(615) 775–4368

(Northern Georgia residents may attend and fulfill Georgia Certification requirements.)

TEXAS

Masters and Ph.D. Program:
Texas A & M University
Dr. William R. Nash
Department of Educational Psychology
College Station, Texas 77843
(713) 845–1831

UTAH

Masters and Ph.D. Programs:
University of Utah
Dr. Joan Wolf or Dr. Calvin Y. Taylor
Special Education Department (Masters)
(801) 581–8121
and/or
Dr. Calvin W. Taylor or Dr. Reed Merrill
Educational Psychology Department
(Individualized Doctoral Program)
(801) 581–6877
Salt Lake City, Utah 84112

VIRGINIA

Masters and Ph.D. Program:
University of Virginia
Dr. Virgil S. Ward
School of Education
Peabody Hall
Charlottesville, Virginia 22903
(804) 924–7471

WASHINGTON

Masters and Ph.D. Program:
University of Washington
Dr. Maurice Freehill
Department of Educational Psychology
322 Miller Hall, DQ–12
and/or
Dr. Mildred Kersh
Curriculum and Instruction
115 Miller Hall
Seattle, Washington 98195
(206) 543–6347 or 543–1847

FOREIGN—CANADA

Masters and Ph.D. Program:
McGill University
Dr. Bruce M. Shore
Department of Educational Psychology
and Sociology
3700 McTavish Street
Montreal, Quebec, H3Z 2J3
(514) 392–8803 or 392–4731

INFORMATION ON HIGHER DEGREE PROGRAMS IN GIFTED EDUCATION OFFERED BY THE FOLLOWING STATES AND DISTRICTS IS UNAVAILABLE:

Alaska, Arkansas, Delaware, District of Columbia, Hawaii, Idaho, Kentucky, Louisiana, Maine, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Carolina, South Dakota, Vermont, West Virginia, Wisconsin, and Wyoming.

NOTE: Although this list is frequently updated, some valuable programs such as the following may be omitted: the M.Ed., Specialist, and doctoral programs at Georgia State University, Atlanta, under the leadership of Dr. Leonard Lucito and Dr. Joseph Walker; and the nonresidential Ph.D. program at Union Graduate School, c/o the Union for Experimenting Colleges and Universities, Provident Bank Building, 7th and Vine St., P.O. Box 85315, Cincinnati, Ohio 45201, (513) 621-6444.

Federal Regulations and Funding

In 1978 new legislation was approved concerning education of the gifted and talented. This legislation, Public Law 95–561, is quoted with marginal notations highlighting specific aspects of the law.

PUBLIC LAW 95-561—NOV. 1, 1978

Additional Programs Authorized

Sec. 802. The Act is amended by adding after title XIII, as added by section 801, the following new title:

TITLE IX—ADDITIONAL PROGRAMS

Part A—Gifted and Talented Children

Short Title; Purpose

Sec. 901. (a) This part may be cited as the "Gifted and Talented Children's Education Act of 1978".

Title: "*Gifted and Talented Children's Education Act of 1978*"

(b) The Congress hereby finds and declares that—

Rationale.

(1) the Nation's greatest resource for solving critical national problems in areas of national concern is its gifted and talented children,

(2) unless the special abilities of gifted and talented children are developed during their elementary and secondary school years, their special potentials for assisting the Nation may be lost, and

(3) gifted and talented children from economically disadvantaged families and areas often are not afforded the opportunity to fulfill their special and valuable potentials, due to inadequate or inappropriate educational services.

(c) It is the purpose of this part to provide financial assistance to State and local educational agencies, institutions of higher education, and other public and private agencies and organizations, to assist such agencies, institutions and organizations to plan, develop, operate, and improve programs designed to meet the special educational needs of gifted and talented children.

Definition

Sec. 902. For the purposes of this part, the term "gifted and talented children" means children and, whenever applicable, youth, who are identified at the preschool, elementary, or secondary level as possessing demonstrated or potential abilities that give evidence of high performance capability in areas such as intellectual, creative, specific academic, or leadership ability, or in the performing and visual arts, and who by reason thereof, require services or activities not ordinarily provided by the school.

Areas include: Intellectual, creative, specific academic, leadership, performing and visual arts.

Authorization of Appropriations; Apportionment of Appropriations

Sec. 903. (a) For the purpose of carrying out this part there are authorized to be appropriated $25,000,000 for fiscal year 1979, $30,000,000 for fiscal year 1980, $35,000,000 for fiscal year 1981, $40,000,000 for fiscal year 1982, and $50,000,000 for fiscal year 1983.

Amount of funding.

(b) (1) From the amounts appropriated under subsection (a) for each fiscal year, the Commissioner shall reserve 25 per centum or $5,000,000, whichever is less, for carrying out the provisions of section 905, relating to discretionary programs.

(2) The remainder of the sums appropriated under subsection (a) for each fiscal year shall be available to carry out the provisions of section 904, relating to State programs.

State Programs

Sec. 904. (a) From the amounts available in any fiscal year under section 903 (b) (2), the Commissioner shall make grants to State educational agencies for the Federal share of the cost of planning, developing, operating, and improving programs designed to meet the educational needs of gifted and talented children at the preschool, elementary, and secondary levels. Such programs may include inservice training or personnel to teach such children.

(b) (1) Except as provided in paragraph (2), to the extent funds are available in any fiscal year to carry out the provisions of this section, the Commissioner shall distribute funds so as to assure that each State educational agency which submits an application which fully meets all requirements of this section and is approved by the Commissioner will receive not less than $50,000 in that fiscal year. If sums appropriated for any fiscal year for making payments under this subsection are not sufficient to pay in full the amount to which each State educational agency is entitled under the previous sentence, such amounts shall be ratably reduced.

75% of funding goes to states.

(2) In any fiscal year in which appropriations under this part equal or exceed $15,000,000, the Commissioner shall allot the amount so appropriated in accordance with the provisions of section 906.

(c) Each State educational agency desiring to receive a grant under this section shall submit an application at such time, in such manner and accompanied by such information as is necessary for the purposes of this section. Each such application shall contain assurances that—

(1) funds paid to the State educational agency will be expended solely to plan, develop, operate, and improve programs and projects which—

(A) are designed to identify the educational needs of gifted and talented children,

(B) are of sufficient size, scope, and quality to hold reasonable promise of making substantial progress toward meeting such needs, and

(C) give appropriate consideration to the particular educational needs of disadvantaged gifted and talented children;

(2) (A) the State educational agency will reserve from funds made available under this section in each fiscal year not more than 10 per centum of such funds for the purpose of administration, technical assistance, coordination, and statewide planning related to programs and projects designed to meet the needs of gifted and talented children;

(B) the State educational agency will distribute, on a competitive basis, not less than 90 per centum of the funds made available under this section for payments to local educational agencies within the State which apply to the State educational agency, with due regard for the quality of activities proposed in the application of the local educational agencies;

90% of state funding goes to local educational agencies.

50% of this is for identification of disadvantaged gifted and talented children.

(3) the State educational agency will use at least 50 per centum of the funds made available under this section for programs and projects which include a component for the identification and education of disadvantaged gifted and talented children from low-income families;

(4) the State educational agency and the local educational agencies within the State may use funds made available under this section to acquire instructional equipment only if such equipment will enhance the program or project for which such funds are furnished;

(5) (A) the requirements of section 406 of this Act (relating to participation of pupils and teachers in private elementary and secondary schools) are met unless such requirements cannot legally be met in the State (as determined by the State educational agency);

(B) the State educational agency will not approve the application of a local educational agency within the State for assistance under this section unless the State educational agency determines that in designing the proposal subject to the application the needs of children in nonprofit private elementary and secondary schools have been taken into account through the consultation with private school officials and by other appropriate means; and

(6) the State educational agency will provide to local educational agencies within the State, which are unable to compete due to smaller size or lack of financial resources, technical assistance in preparing proposals and in planning, developing, and operating programs under this section.

(d) The Commissioner shall approve any application which meets the requirements of subsection (c) and not disapprove any such application without first affording an opportunity for a hearing.

25% of funding goes to federal commissioner for:

Discretionary Programs

Sec. 905. (a) From the amounts available in any fiscal year under section 903 (b) (1) the Commissioner may—

—programs for gifted and talented children, and/or training of personnel.

(1) make grants to State educational agencies, local educational agencies, institutions of higher education, and other public and private agencies and organizations, to assist them in establishing or maintaining programs or projects designed to meet the educational needs of gifted and talented children including the training of personnel in educating gifted and talented children or in supervising such personnel;

(2) make grants to State educational agencies to assist them, either directly or through arrangements by the State educational agencies with other institutions, agencies, and organizations eligible to receive funds under this part, to provide training of personnel engaged in the education of gifted and talented children or supervision of such personnel;

—model projects.

(3) enter into contracts with, and make grants to, public agencies and private organizations including State and local educational agencies, to establish and operate model projects for the identification and education of gifted and talented children;

—dissemination of information.

(4) make grants to, or enter into contracts with, public agencies, private organizations, or institutions which together or singly constitute a clearinghouse to disseminate information about programs, services, resources, research, methodology, and media materials for the education of gifted and talented children;

—planning.

(5) make grants to State educational agencies to assist them in the statewide planning, development, operation, and improvement of programs and projects designed to meet the educational needs of gifted and talented children; and

—research/evaluation.

(6) conduct, either directly or by grant or contract, a program of research, evaluation, and related activities pertaining to the education of gifted and talented children and may transfer to the National Institute of Education pursuant to subsection (c) not more than 20 per centum of the sums available in any fiscal year to carry out the provisions of this section,

to pay the Federal share of the cost of such grants or contracts. Not more than 20 per centum of the sums available in any fiscal year under this section may be used pursuant to clause (1) of this subsection for grants to institutions of higher education for the training of national leadership personnel.

(b) (1) No grant may be made and no contract may be entered into under this section unless an application is submitted to the Commissioner in such form, in such manner, and containing such information, as is necessary for the purposes of this section.

(2) The requirements of section 406 of this Act (relating to the participation of pupils and teachers in private, elementary, and secondary schools) shall apply to programs and projects under this section unless such requirements cannot legally be met in the State (as determined by the State educational agency of the State in which the applicant for funds under this section is located).

(c) (1) Notwithstanding the second sentence of section 405 (b)(1) of the General Education Provisions Act, the National Institute of Education may, in accordance with the terms and conditions of section 405 of such Act, carry out a program of research and related activities pertaining to the education of gifted and talented children from funds transferred pursuant to subsection (a) (6).

(2) For purposes of this section the term "research, evaluation, and related activities" means research, research training, evaluation, surveys, and demonstrations in the field of education of gifted and talented children and youth or the dissemination of information derived from such research, surveys or demonstrations, and all such activities, including experimental and model schools.

State Allotments

Sec. 906. (a) (1) In any fiscal year in which appropriations for this part are equal to or exceed $15,000,000 the Commissioner shall allot, from amounts available under section 903 (b) (2), not more than 1 per centum among—

(A) Guam, American Samoa, the Virgin Islands, the Trust Territory of the Pacific Islands, and the Northern Mariana Islands;

(B) programs for children and teachers in elementary and secondary schools operated for Indian children by the Department of the Interior; and

(C) programs authorized for children and teachers in overseas dependent schools of the Department of Defense,

in accordance with their respective needs.

(2) From the remainder of such sums in any such fiscal year, the Commissioner shall allot to each State which has an application meeting the requirements of section 904, an amount which bears the same ratio to such remainder as the number of children in the State aged 5 to 17 years, inclusive, bears to the number of children in all States, except that no State shall receive less than $50,000 in any such fiscal year.

(3) For the purpose of this subsection the term "State" means the several States, the Commonwealth of Puerto Rico, and the District of Columbia.

(b) The amount of any State's allotment under subsection (a) for any fiscal year which the Commissioner determines will not be required for such fiscal year shall be available for reallotment from time to time, on such dates during such year as the Commissioner may fix, to other States in proportion to the original allotments to such States under subsection (a) for that year but with such proportionate amount for any of such other States being reduced to the extent it exceeds the sum the Commissioner estimates such State needs and will be able to use for such year; and the total of such reduction shall be similarly reallotted among the States whose proportionate amounts were not so reduced. Any amounts reallotted to a State under this subsection during a year from funds appropriated under section 903 shall be deemed part of its allotment under section (a) for such year.

Administration

Sec. 907. (a) The Commissioner shall designate an administrative unit within the Office of Education to administer the programs and projects authorized by this part and to coordinate all programs for gifted and talented children and youth administered by the Office of Education.

(b) Notwithstanding any other provision of law, any Indian tribe which operates schools for its children shall be deemed to be a local educational agency for the purposes of this part.

(c) No financial assistance may be made to a local educational agency for a period in excess of 5 years. The limitation contained in this subsection shall not apply to any financial assistance extended prior to the date of enactment of the Education Amendments of 1978.

Federal Share

Sec. 908. The Federal share for any fiscal year shall be 90 per centum, except that the Federal share for the clearinghouse activities under section 905 (a) (4), the research, evaluation, and related activities under section 905 (a) (6), and programs and projects involving the participation of students in for nonprofit private elementary and secondary schools shall be 100 per centum.

REASONS FOR DENIAL OF FUNDING

The following is a checklist for evaluators of program proposals for gifted and talented.* Although not all proposals follow the same guidelines, it would be valuable to be aware of what the readers of the proposals look for when considering them for funding.

________ The project did not demonstrate an innovative approach to the education of gifted and talented.

________ The project failed to show sufficient need for the proposed activities for the gifted and talented.

________ The objectives were not realistically attainable in relation to the identified needs of the gifted and talented.

________ The portion of project costs to be funded by the federal government is not reasonable in order to attain the expected benefits.

________ The background, training, and experience of the staff is not relevant to engaging in the education of the gifted and talented.

________ The project does not provide for periodic self-evaluation in such a manner to influence the further thrust of the project.

________ The project is not cost effective in terms of federal investment.

________ The objectives were not specific and immediate in relation to the needs identified and did not contain *appropriate strategies* to meet these objectives.

________ The activities were not planned to meet the *unique needs of the individual.*

________ The activities did not incorporate *innovative concepts and techniques* which could be replanned to meet current problems expected in gifted and talented.

________ The project did not demonstrate expertise to train and prepare staff.

________ The project did not effectively and efficiently use existing monetary, human, and informational resources; public, private, and community.

________ The project did not demonstrate innovative coordination of resources for program management.

________ The program did not utilize objective assessment procedures.

________ The evaluation plan did not directly or indirectly involve parents, students, or community in the evaluation process.

________ The evaluation plan did not *use* accomplishments of gifted and talented *students* or their *teachers* as part of evaluation process.

________ There were not sufficient monetary or human resources for organizing final results of the project in exportable form.

________ The in-service training is not as comprehensive or of sufficient quality to make an impact.

________ The project does not demonstrate evidence of *substantial commitment or continuation* of training activities beyond funding period.

________ The project is not involving individuals who are *actively involved* with gifted and talented.

________ The project does not appear to have the *scope to effect a long-range and lasting change.*

________ The project does not utilize staff or consultants in such a manner as to *maximize resource management.*

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* Adapted from "Reviewers' Comments," U.S.O.E./Gifted and Talented.

________ The project is not part of a *comprehensive state plan* for individualizing and meeting special educational needs of gifted and talented.

________ The selection of the participants in the project does not indicate evidence of significant promise or commitment to the field of gifted.

________ The project does not provide *technical assistance and coordination services* for short-term interim training institutes at the *local level.*

________ The project does not plan to conduct periodic workshops on *topics of timely impact* to the gifted studies, culturally different, family relations, etc.

________ The project does not provide a *communication network* for leadership personnel.

________ The project does not adequately provide for the development of *training materials.*

________ The project does not provide for short-term training of teams of leadership personnel from LEA's, private agencies, or institutions with a *wide national impact on education* of gifted and talented.

SAMPLE PROGRAM

The following are some of the curricular materials from the Program for Gifted and Talented, Foxborough Schools Foxborough, Massachusetts. The basic goal of the program is to provide differentiated instruction for gifted and talented students in academic areas as well as in music and art while maintaining the heterogeneity of the classes wherever feasible.

General Description (disseminated throughout the faculty and to each parent of a student in the program):

September 1979

Program Title: Project Prism at Foxborough
Foxborough Schools
Foxborough, Massachusetts 02035
(617) 543-4811

Director: Dr. Frederick B. Tuttle, Jr.

Goal: To provide differentiated experiences appropriate for identified gifted and talented students in a variety of areas.

Identification Procedure: Teacher nomination, standardized tests, culture fair test.

Program Description: The program for gifted and talented students in Foxborough, grades 6–8, currently has three components:

1. Advanced experiences in visual and performing arts (band and art). Selected students participate in individual instructional sessions, and extracurricular activities such as ensembles and music festivals.
2. Minicourses. Selected students may engage in general courses such as "Futures" and "Alternative Energy Sources" which incorporate several academic disciplines. These courses are designed to accomplish several goals: (a) teach advanced skills and concepts; (b) engage students in high-level cognitive activities; and (c) encourage students to produce works reflective of their abilities.
3. Sponsored experiences. Individual or small groups of students may "contract" with teachers or mentors for projects in their own areas of interest. These contracts entail work at higher levels of cognition and require products reflecting the student's exceptional abilities.

The instruction and learning experiences in the minicourses and sponsored experiences are closely coordinated with classroom instruction so redundant and "extra" work for these students is minimized. In-service training is provided to help with coordination and implementation.

4. We are also considering a counseling component in which the selected students will focus on problems and conflicts unique to the gifted and talented.

Program Director: Role Description

1. Help students focus on areas of interest for "Prism Experiences." This is usually accomplished through personal interviews.
2. Help students and sponsors (mentors) formulate and describe the experience, ensuring continuity and differentiation.

3. Coordinate the student's work in the experience and his/her work in related classes to minimize redundancy and "extra" work.
4. Locate resources when necessary to facilitate the functioning of an experience.
5. Articulate the program to teachers and community.
6. Coordinate modification and expansion of the program.
7. Provide in-service training on meeting the needs of gifted and talented students.

Proposal for Experiences. When a student wishes to begin work in a particular area of interest, the student and/or director locate a sponsor (mentor) and they develop an "Experience Proposal," describing the general program for the student. An example of a "Proposal for Experiences" appears on page 109.

Individual Contract. Once the "Proposal for Experience" has been completed, the student meets with the sponsor (mentor) and completes an individual contract. Currently, the "Management Plan" developed by Joseph S. Renzulli provides the general format for the contract. An example of such a contract appears on pages 110–11.

After a student begins a "Prism Experience," the director sends a letter to the student's parents indicating with whom the student is working and stressing the commitment the student has accepted. An example of such a letter appears on page 112 and an accompanying description of the experience follows.

"Prism" Experience for Bill Maloney

Title of Experience: Book Review

Goal: To write a book review of a new book in the area of fantasy fiction.

Advanced Skills and Concepts Learned:

critical analysis of popular fiction, synthesis of information from several sources, development of criteria for evaluating books, and writing book reviews for general consumption through the public libraries.

Description of Work Involved: Bill will read several books in the area of fantasy fiction and analyze them to determine what constitutes "good" fantasy fiction. At this point he will write a short essay citing the criteria he has established. Then Bill will read book reviews from several sources and determine the elements in a book review. After this he will be given a new fantasy fiction book and will write a book review of it. Then he will meet with other students and adults in the area to discuss and refine their book reviews. Finally, he will submit the finished book review for publication throughout the Boston area libraries.

Description of Final Product: The final product will be the published book review.

Proposal for Experience for G/T (Prism) Students

1. **Goal of Experience:** Produce and present a critical review of a literary work

2. **Subject Area(s):** LANGUAGE ARTS (and subject areas related to nonfiction books)

3. **Population: students from grades** 6-8

number 10

4. **Selection Procedure:** Self-selection, informal interview, teacher recommendation

5. **Overview of Experience:** Students will describe criteria for evaluating works in a particular area of interest. Students will read a fiction or nonfiction book and write a critical review. Some students will have the opportunity to present the review at a meeting. All accepted reviews will be published.

6. **Basic skills and concepts covered through this experience:**

Reading Writing (exposition)

Speaking (presentations, discussion)

7. **Advanced skills and concepts covered through this experience:**

Analysis Critical thinking and evaluation

Synthesis of information from several sources

8. **Differentiation for Prism students (i.e., how is this different from what you would do with other students?)** (1) Assuming ability to read fiction and nonfiction independently; (2) Discussions will begin at analysis level regarding literary works and essays; (3) Focus will be on establishing criteria for critical analysis; (4) Written book review will be for publication.

9. **Resources needed: People** Jane Shapiro, Fred Tuttle, Barbara Selvitella

Materials Book Reviews Novels **Other** Transportation to libraries for book review discussions

10. **Logistics: Time:** TBA **Place:** TBA

11. **Evaluation: Students:** Quality of reviews

Experience: Discussion with students

MANAGEMENT PLAN FOR INDIVIDUAL

NAME Bill Maloney GRADE 7

TEACHER Mr. Crowley SCHOOL Ahern

GENERAL AREA(S) OF STUDY (Check all that apply)

x Language Arts/Humanities

__ Social Studies

__ Mathematics

__ Science

__ Music

__ Art

__ Personal and Social Development

__ Other (Specify)

__ Other (Specify)

INTENDED AUDIENCES

Which individuals or groups would be most interested in the findings? List the organized groups (clubs, societies, teams) at the local, regional, state, and national levels. What are the names and addresses of contact persons in these groups? When and where do they meet?

1. Boston Public Libraries
2. Teachers of English
3.
4.
5.

INTENDED PRODUCT(S) AND OUTLETS

What form(s) will the final product take? How, when and where will you communicate the results of your investigation to an appropriate audience(s)? What outlet vehicles (journals, conferences, art shows, etc.) are typically used by professionals in this field?

1. Book review
2. List of criteria for evaluating fantasy fiction.

GETTING STARTED

What are the first steps you should take to begin this investigation? What types of information or data will be needed to solve the problem? If "raw data," how can it be gathered, classified, and presented? If you plan to use already categorized information or data, where is it located and how can you obtain what you need?

Read fantasy fiction books and critical essays and discuss with others.

AND SMALL GROUP INVESTIGATIONS

Beginning Date 10/1 **Estimated Ending Date** 12/4

Progress Reports Due on Following Dates 10/22 11/4 11/25

SPECIFIC AREA OF STUDY

Write a brief description of the problem that you plan to investigate. What are the objectives of your investigation? What do you hope to find out?

What are the elements that distinguish fantasy fiction from other modes?

Objective: Write a critical review of a fantasy fiction novel.

METHODOLOGICAL RESOURCES AND ACTIVITIES

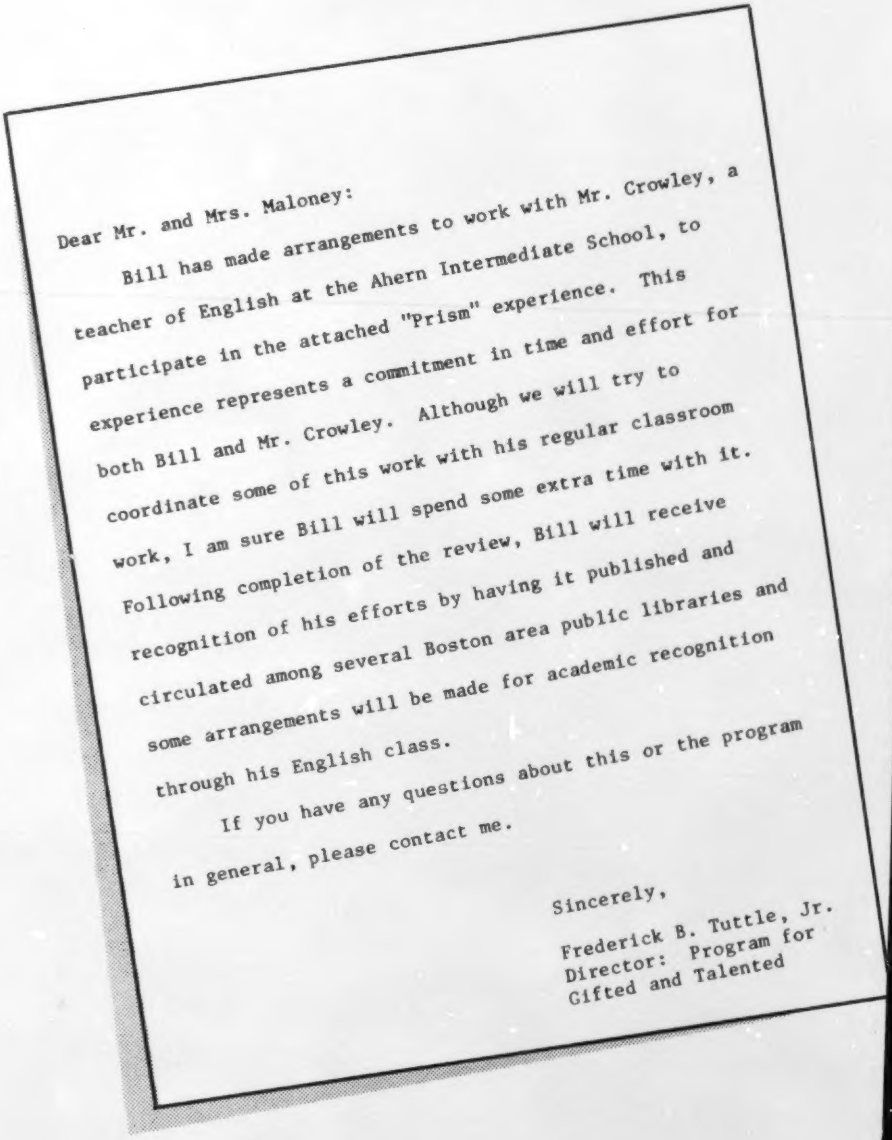
List the names and addresses of persons who might provide assistance in attacking this problem. List the how-to-do-it books that are available in this area of study. List other resources (films, collections, exhibits, etc.) and special equipment (e.g., camera, transit, tape recorder, questionnaire, etc.). Keep a continuous record of all activities that are part of this investigation.

Resources:
1. People - Dr. Tuttle - Ahern School
   - Mr. Crowley - Ahern School
   - Mrs. Selvitella - High School
   - father - home
2. Readings -
   - Fantasy fiction books (see back for list)
   - Critical essays on fantasy fiction
   - Book Reviews

Steps:
1. Read fantasy fiction books
2. Read critical essays
3. Discuss elements of fantasy fiction with sponsor and/or resource people
4. Write list of evaluation criteria for fantasy fiction
5. Read and discuss various book reviews
6. Write draft of book review for new fantasy fiction novel
7. Share draft with others
8. Revise book review and submit for publication

From *A Guidebook for Developing Individualized Educational Programs for Gifted and Talented Students* (page 38, actual size: 11x17) by Joseph S. Renzulli and Linda H. Smith (Mansfield Center, Conn.: Creative Learning Press, 1979).

Sample Letter to Parents



Dear Mr. and Mrs. Maloney:

Bill has made arrangements to work with Mr. Crowley, a teacher of English at the Ahern Intermediate School, to participate in the attached "Prism" experience. This experience represents a commitment in time and effort for both Bill and Mr. Crowley. Although we will try to coordinate some of this work with his regular classroom work, I am sure Bill will spend some extra time with it. Following completion of the review, Bill will receive recognition of his efforts by having it published and circulated among several Boston area public libraries and some arrangements will be made for academic recognition through his English class.

If you have any questions about this or the program in general, please contact me.

Sincerely,

Frederick B. Tuttle, Jr.
Director: Program for
Gifted and Talented

SAMPLE PRIMARY INVESTIGATION: RENZULLI

Prototype of a Type III Enrichment Activity in Social Science*

A small group of students in a middle-grade program for the academically talented got into an argument about an issue over which political candidates were divided in a forthcoming election for city government. The issue involved the construction of an oil refinery on the city's waterfront and opinion was divided over whether or not the majority of voters were in favor of the project. Some students supported the position of candidates who were against the refinery because of environmental concerns while others felt that the refinery was needed to help the city's sagging economy and high unemployment rate.

The students decided that they would like to assess the status of voters' attitudes and the teacher helped to focus the problem by suggesting that the students conduct a questionnaire study. It was at this crucial point that the teacher decided to provide the youngsters with methodological assistance only, and to do this she consulted with a librarian at a nearby college. The librarian suggested that the teacher look through the sections on Psychometrics and Questionnaires and she quickly located the following books:

Oppenheim, A. N. *Questionnaire Design and Attitude Measurement.* New York: Basic Books, 1966, 298 pp.

Shaw, M. & Wright, J. *Scales for the Measurement of Attitudes.* New York: McGraw-Hill, 1967, 372 pp.

These books deal with basic issues in the methodology of attitude study such as instrument design, question wording, sampling, and advantages and disadvantages of several scaling techniques. The book by Shaw and Wright also included a compendium of various types of questionnaires, checklists, and rating scales. The teacher also brought in a few sample copies of a journal that she located entitled *Public Opinion Quarterly* and this helped to heighten student interests about the entire field of polling and attitude measurement. Although these materials are written for college-level students, the gifted youngsters were able to understand most of them and the teacher assisted by explaining some of the more difficult concepts. Following suggestions outlined in Oppenheim's book, the youngsters constructed a pilot version of their questionnaire and field tested it on a small sample of students and parents. Feedback obtained from field testing was used to revise certain aspects of the instructions and a number of items after which a final version of the questionnaire was mailed to a random sample of citizens in the community. The teacher provided additional methodological assistance by obtaining the following two books:

Blalock, Hubert. *Social Statistics.* New York: McGraw-Hill, 1960, 465 pp.

Smith, G. Milton. *A Simplified Guide to Statistics.* (4th ed.) New York: Holt, Rinehart, and Winston, 1962, 244 pp.

These books contain discussions about how to analyze types of data obtained from questionnaires and they also include information about how to prepare histograms and graphic representations of statistical findings. The students developed statistical, narrative and graphic summaries of the results of their investigation and prepared a final report. Presentations about the results of the study were made to other groups of students and to persons attending a PTA meeting. Parts of the report were also included in a newsletter distributed by the school and in the school news section of a local newspaper.

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* From *The Enrichment Triad Model* by Joseph Renzulli (Mansfield Center, Conn.: Creative Learning Press, 1977).

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Periodicals

G/C/T
Box 66654
Mobile, AL 36606

Gifted Child Quarterly
National Association for Gifted Children
217 Gregory Drive
Hot Springs, AR 71901

Exceptional Children
Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

National/State Leadership Training Institute on the Gifted and Talented *Bulletin*
Civic Center Tower Building
316 West Second Street, Suite PH-C
Los Angeles, CA 90012

Education Unlimited
1834 Meetinghouse Road
Boothwyn, PA 19061

Dromenon
Box 2244
New York, NY 10011

Media

Simple Gifts (videotapes)
University of Wisconsin Telecommunications Center
WHA-TV
Madison, WI 53706

Talks with Teachers About Gifted and Talented Students:
Initiating a Program
Teacher Selection and Program Evaluation
Training Teachers to Work with Gifted Learners
Funding
Parents of the Gifted and Talented: A Teacher's View
A Parent's View of Gifted and Talented Children (audiotapes)
National Education Association
1201 16th Street, NW
Washington, DC 20036

Threat or Invitation: Program Development for Gifted and Talented (videotape by Frederick B. Tuttle, Jr., and Laurence A. Becker)
Educational Communications Center
State University of New York, College at Brockport
Brockport, NY 14420

ACTIVITIES FOR TEACHERS

PROGRAM DESIGN

Rationale

Need: Beside the characteristics list some specific difficulties that may arise in a classroom. Add other characteristics and related problems.

Characteristics	*Related Problems in School*
• Divergent thinking ability	
• Highly verbal	
• Critical of self and others	
• Divergent modes of response	
• Persistent in pursuit of own goals	

Misconceptions and Concerns

List specific misconceptions and concerns that exist in your area. Beside each, outline a response.

Misconception or Concern	*Response*
(Example: The gifted can make it on their own.)	Some only doing mediocre work, others have emotional/defensive problems, only a few really achieving to potential . . .

Administrative Designs

For each of the following general designs or program options, list arguments in favor (pro) of its use in your situation and arguments against (con).

Design	*Pro*	*Con*
Semiseparated		
Integrated		
Accelerated		
Enrichment		

Briefly describe a specific administrative design that might work in your situation (see Glossary of Administrative Designs on pp. 88–89).

After selecting a potential design for your situation, list as many factors as you can which will help you implement this design. (e.g., interested teachers, concerned parents, historical precedence of support for students).

Positive (Facilitators)

Now list all those factors which may impede implementation of this design (e.g., budget, transportation, lack of in-service).

Negative (Inhibitors)

Check the most important inhibitors that have to be overcome before the program can be implemented. Discuss ways these problems may be overcome.

EXAMINATION OF CASE STUDY

Read the case study of Ralph on pp. 36–37. Using the modified problem-solving model which follows, discuss the questions about the case study. Try to be very specific in your responses. This examination may be facilitated by having several groups explore different questions and share the results.

Model

1. *Identify the problem.* State the specific problem implied in the question.

2. *Identify alternative solutions.* List as many possible solutions as you can to the problem.

3. *Evaluate the solutions.* Discuss each solution, considering both objective and subjective factors.

4. *Select the best alternative.*

Questions (For each of the situations, assume the school and the community are similar to your own.)

1. If you were Ralph's *parents*, what would you have done at each grade level? What would you do now?

2. If you were Ralph's *teachers*, what would you have done or suggested as a course of action for Ralph and his parents?

3. If you were the *principal* of Ralph's school, what would you have suggested for the boy? If you had several children in your school like Ralph, what would you do?

CURRICULAR MODELS

Bloom's Taxonomy

Select a specific concept or topic from your curriculum (e.g., a particular novel or scientific principle), and write specific activities for it within each of the following levels of the taxonomy:

Knowledge: ______________________________

____

____

Comprehension: ______________________________

____

____

Application: ______________________________

____

____

Analysis: ______________________________

____

____

Synthesis: ______________________________

____

____

Evaluation: ______________________________

____

____

Assume you are about to assess a classroom situation to determine whether or not the activities are at the higher levels of the taxonomy. What kinds of student behavior would you look for in this class? List three sample behaviors for each of the levels listed.

Application

(Example: Student applies knowledge to new situation.)

1. ______________________________

2. ______________________________

3. ______________________________

Analysis

(Example: Student classifies main ideas and supporting details.)

1. ______________________________

2. ______________________________

3. ______________________________

Synthesis

(Example: Student combines ideas from different sources and draws a conclusion.)

1. ______________________________

2. ______________________________

3. ______________________________

Structure of the Intellect

Since this is a more complex area, a series of activities are included to help familiarize you with the components of the S.I. Model.*

1. Operation and Content
    - 1.1 Write the name of each incomplete figure on the lines below the items which follow. This is an example of *Cognition* of *Figural, Symbolic*, and *Semantic* content.
    - 1.2 On a separate page recall as many of the items as you can. This is an example of *Recall* of *Figural, Symbolic*, and *Semantic* content.
    - 1.3 Divide this list into three subcategories. You should have groupings similar to Figural (pictures and shapes), Symbols (letters and numbers), and Semantic (words). This is an example of *Convergent Production.*
    - 1.4 Using letters from words in list 1.2, construct as many words as you can. This is an example of *Divergent Production.*
    - 1.5 Circle all words in your new list (1.4) with two or more vowels. This is an example of *Evaluation.*

2. Product
    - 2.1 Invent a vegemal (a combination of a vegetable and an animal—e.g., carrophant—carrot and elephant). List several. Each vegemal is a *Unit.*
    - 2.2 Group the vegemals into separate categories. Each category is a *Class.*
    - 2.3 State the rationale (characteristic) for the groupings. The statement is a *Relationship.*
    - 2.4 List the vegemals in hierarchical order so that you can add additional vegemals in appropriate positions. You now have a *System.*
    - 2.5 Change some of the vegemals so that they would fit in a different position on your hierarchy. The new vegemals are *Transformations.*
    - 2.6 Create some "What-would-happen-if . . ." questions and answer them. For example, what would happen if you mated a carrophant with an asperphant? You might have a carrot or an asperphant. The answer is an *Implication.*

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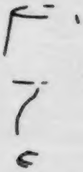
* Many of the activities in this section were developed by Donald Nasca, State University of New York, College at Brockport.



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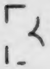

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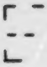

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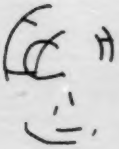

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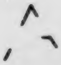

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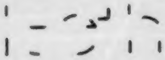

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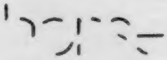

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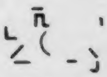

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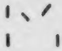

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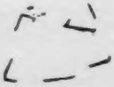

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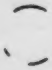

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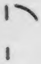
12. ________



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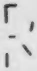

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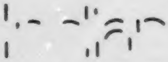

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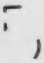

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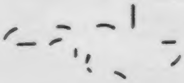
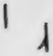


17. ________



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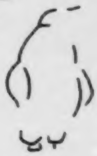

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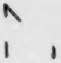
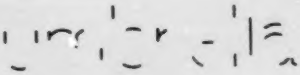


20. ________

21. ________



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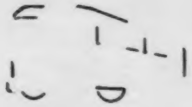

23. ________

NOTE: These drawings are used with the permission of Donald Nasca.

Renzulli's Triad

In the spaces which follow, briefly outline a sample "Unit" in your specific area. (See sample given in chapter 3).

Exploratory Activities (List materials and short activities you might use to interest your students in the topic.)

- ________________________________
- ________________________________
- ________________________________
- ________________________________
- ________________________________
- ________________________________

Training Activities (List the specific areas of skill development and describe one in detail.)

- ________________________________
- ________________________________
- ________________________________
- ________________________________
- ________________________________
- ________________________________

Possible Investigations (List some possible extensions of the theme students might wish to pursue in depth. Beside each possibility, cite a potential "real" audience.)

Problem	*Audience*
• ____________	____________
• ____________	____________
• ____________	____________

TEACHER SELECTION

1. From the following list, check those teacher characteristics which you feel would be most appropriate for your program. Then discuss them with the group.

   - highly intelligent
   - friendly
   - flexible and creative
   - demanding
   - self-confident and emotionally mature
   - sense of humor
   - interested in many areas
   - knowledgeable in subject area
   - experienced in system
   - businesslike in classroom behavior
   - in favor of special provisions for gifted students
   - hard grader
   - alert
   - well trained to work with the gifted and talented
   - extremely professional in attitude and actions
   - intellectually honest
   - nonauthoritarian
   - enthusiastic

   The traits cited are not unique to the teacher of the gifted. Indeed most would be valuable characteristics for any teacher. However, some of these, such as self-confidence and high intelligence, are particularly important in classes for gifted because of the intellectual challenge presented by these students.

2. Write the teacher characteristics your group feels appropriate on the following lines.

A. ______________________
B. ______________________
C. ______________________
D. ______________________
E. ______________________
F. ______________________
G. ______________________
H. ______________________
I. ______________________
J. ______________________
K. ______________________
L. ______________________

3. Prioritize the characteristics by placing the representative letters on the appropriate lines in the sorting pyramid.

		________		
	________	________	________	
	________	________	________	
________	________	________	________	________
Most Vital	Vital	Somewhat Vital	Less Vital	Least Vital

4. List the characteristics considered *somewhat vital*, *vital*, and *most vital* on the following lines and write two indicative behaviors for each.

4.1 ________________________________
  4.11 ______________________________
  4.12 ______________________________
4.2 ________________________________
  4.21 ______________________________
  4.22 ______________________________
4.3 ________________________________
  4.31 ______________________________
  4.32 ______________________________
4.4 ________________________________
  4.41 ______________________________
  4.42 ______________________________
4.5 ________________________________
  4.51 ______________________________
  4.52 ______________________________
4.6 ________________________________
  4.61 ______________________________
  4.62 ______________________________
4.7 ________________________________
  4.71 ______________________________
  4.72 ______________________________
4.8 ________________________________
  4.81 ______________________________
  4.82 ______________________________

5. As a group compile a checklist of teacher behavior that might help locate a qualified teacher of gifted and talented.

____
____
____
____
____
____
____
____
____
____

EVALUATION

Development of Questions

List the major goals of the program in the column at the left and the questions that might be asked about each goal in the column at the right.

Goals	*Questions*
(Example: Students will work at the higher levels of the taxonomy.)	(Example: Did the classroom activity reflect work at the higher levels of the taxonomy? Did student products demonstrate ability to synthesize and evaluate ideas?)

Categorize the questions, writing more encompassing ones where necessary.

Instruments and Methods

For each question list instruments and/or methods that might help answer the question.

Questions	*Instruments/Methods*
(Example: Did the classroom activity reflect work at the higher levels of the taxonomy?)	(Example: Classroom observation using the Florida Taxonomy of Cognitive Behavior)